JOURNAL OF SOCIOCYBERNETICS

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SOCIOCYBERNETICS traces its intellectual roots to the rise of a panoply of new approaches to scientific inquiry beginning in the 1940's. These included General System Theory, cybernetics and information theory, game theory and automata, net, set, graph and compartment theories, and decision and queuing theory conceived as strategies in one way or another appropriate to the study of organized complexity. Although today the Research Committee casts a wide net in terms of appropriate subject matters, pertinent theoretical frameworks and applicable methodologies, the range of approaches deployed by scholars associated with RC51 reflect the maturation of these developments. Here we find, again, GST and first- and second-order cybernetics; in addition, there is widespread sensitivity to the issues raised by "complexity studies," especially in work conceptualizing systems as self-organizing, autocatalytic or autopoietic. "System theory", in the form given it by Niklas Luhmann, and world-systems analysis are also prominently represented within the ranks of RC51.

The institutionalization of sociocybernetic approaches in what was to become RC51, the Research Committee on Sociocybernetics of the International Sociological Association, began in 1980 with the founding of an ISA Ad Hoc Group and proceeded with the organization of sessions at succeeding quadrennial World Congresses of Sociology. The eventual RC51 became a Thematic Group and then a Working Group. Finally, in recognition of its extraordinary success (growing from some 30 members in early 1995 to 240 in 1998), the group was promoted to the status of Research Committee at the 1998 World Congress of Sociology in Montreal.

Over these past two decades, sociocybernetics has attracted a broad range of scholars whose departmental affiliations represent the entire spectrum of the disciplines, from the humanities and the social sciences through the sciences, mathematics and engineering. Furthermore, the many countries of origin of these RC51 members attest to the wide international appeal of sociocybernetic approaches. Within this highly diverse community, there is wide agreement on some very general issues, for instance, on developing strategies for the study of human reality that avoid reification, are cognizant of the pitfalls of reductionism and dualism, and generally eschew linear or homeostatic models. Not surprisingly, however, there are also wide divergences in subject matter, theoretical frameworks and methodological practices.

Many have argued that models developed for the study of complexity can be usefully appropriated for the study of human reality. Moreover, however, the emphasis in complexity studies on contingency, context-dependency, multiple, overlapping temporal and spatial frameworks, and deterministic but unpredictable systems displaying an arrow-of-time suggest that the dividing line between the sciences and the historical social sciences is fuzzier than many might like to think. What is more, in the humanities, the uniquely modern concepts of original object and autonomous human creator have come under serious attack. The coincidence of these two phenomena substantiate the impression that across the disciplines there may be observed a new concern for spatial-temporal wholes constituted at once of relational structures and the phenomenological time of their reproduction and change.

In this context of rich history and exciting possibilities, the Research Committee on Sociocybernetics of the International Sociological Association extends an open invitation through the **Journal of Sociocybernetics** to all engaged in the common quest to explain and understand social reality holistically and self-reflexively without forsaking a concern for human values--human values not construed simply as a matter of individual ethics, but conceived as an integral part of a social science for our time.

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MULTIPLE CONSTRUCTIONS OF THE ENVIRONMENTAL CRISIS: A SOCIOCYBERNETIC VIEW

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Simplicity, linearity, and predictability were once the norm in scientific studies of the environment in the West. Recent developments in complex systems thinking have challenged this approach. Theories of emergence, self-organisation, and autopoiesis, to name a few, take paradox, unpredictability, non-linearity, and complexity as a basis for scientific study. These theoretical developments have contributed to multiple constructions of the environmental crisis. Reconciling these multiple constructions within normal science is difficult, if not impossible. The difficulty can be viewed as a "problem of reference." That is, given complexity, what is the foundation of our knowledge of multiple constructions of the environmental crisis? This paper explores implications of multiple constructions of the environmental crisis within the debate about sustainable development.

Normal science is a cautious, analytic approach pre-occupied with understanding social order that leaves little if any room for complex social issues (Kuhn 1970). As described by Kuhn, normal science is a puzzle-solving approach in which it is assumed that the puzzle is soluble. Unsolved problems are seen as anomalies. Subsequently, areas of study and theory grow steadily and cautiously, cultivated within a paradigm of theoretical concepts, including methods and models, approved by scientists in the pertinent field.

Most critically, normal science approaches constrain our ability to deal with multiple constructions of environmental crises because they provide only one point of reference: the subject. Segal (2001: 133) highlights the problem. Segal argues that the subject-object position is only ontological--it will not address itself to how things come about. Reality is taken as objects observed by a subject. So long as the ontology of social theory rests upon subject-object as its point of reference, social theories are limited to describing multiple constructions of the environmental crisis as objects without accounting for the possibility of multiple constructions. Consequently, normal science approaches lack a common basis for negotiating differences.

An alternative to normal science approaches is required to reconcile multiple constructions of the environmental crisis. The challenge is not to re-shuffle "post-modern"

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conceptions of the "subject" to accommodate multiple constructions and multiple points of view. Rather, the challenge is to find an alternative to the subject-centered view of the world as the reference for knowledge of multiple constructions. Meeting this challenge requires a critical and radical science. In this paper Niklas Luhmann's theory of social systems is presented as an alternative approach that can be used to account for multiple constructions of the environmental crisis. Luhmann's theory posits that there are multiple constructions because there are multiple observers, i.e., multiple observing systems. The operative mandate, following the work of Heinz von Foerster (1981), is: observe the observer.

Social theorists have often pointed to the limitations of normal science approaches in dealing with complex social issues (e.g., Wilkinson 1970; Bernard 1973; Boudon 1984; Price 1997; Turner 1997). Wilkinson (1970), for instance, stated that a theory of social order is hamstrung from the outset because disorder, not order, is the dominant feature of human events. Social science, for the most part, remains a study of social order.

Alternatively, what if we choose complexity as a foundation for social science? If we follow this line of inquiry, what are the implications for social constructions? Effectively, the inquiry into multiple constructions of the environmental crisis shifts from a subject-centred inquiry of the environmental crisis as an object to an epistemic inquiry about how we have knowledge of the environmental crisis. In other words, the inquiry has become a "problem of reference." In normal science, the observer is the subject and the observed is the object. A social science premised upon complexity replaces the subject-object view of reality with self-referential observations, that is, the observer is implied in the observation (Luhmann 1995). Sociocybernetics "stresses and gives an epistemological foundation" to a social science of complexity (Geyer and van der Zouwen 1992: 95). A review of Niklas Luhmann's theory of self-referential social systems lends insight into how a sociocybernetic perspective can inform how and why multiple constructions of the environmental crisis emerge and persist.

LUHMANN'S SOCIOCYBERNETICS

Luhmann learned from Husserl that the analysis of society cannot begin with a concept of the subject that does not account for self-reference. After Husserl, the "problem of reference" must be posed as the problem of the operative processing of the difference between self-reference and reference to others (Luhmann 1995: xli), not that of the knowing "subject." Luhmann's general theory of social systems does not attempt to resolve the paradox and tautology of self-reference (e.g., sustainability is what is sustainable or sustainability is not unsustainable). Rather, self-reference is a basal condition for both constructing and observing the environment. Self-referential systems replace the subject as the point of reference for the construction of knowledge: there is no subject because there is no external observer.

A concept of observing systems can be understood in relation to other concepts of systems. Until recently systems have been considered either closed or open. Closed systems are consistent with mechanical systems: internally defined without any reference to their environment. Environment is used here not as the natural environment, but as the system's environment. In open systems the relationship between system and environment is a key

feature, informing such concepts as input and output, adaptation, and equilibrium. Complexity theory, including such concepts as self-organization and emergent properties, are part of open systems thinking. Maturana and Varela's (1980; 1987) development of autopoiesis offered a new paradigm of systems thinking. An autopoietic system still receives input from the environment but has the ability to operate internally in such a way as to continuously re-create the whole, and of the whole to influence the interactions of the parts to that end. The internally organized operations of the system constitute an "observing" system.

Luhmann uses autopoiesis, cybernetics, and phenomenology to construct a general theory of society comprised of observing systems of communication. Society constitutes all social systems. All social systems are observing systems. The primary distinction that guides observation is system-environment. It is the system's ability to observe itself as distinct from its environment that makes it self-referential. The system-environment distinction is autopoietically reproduced so long as it remains meaningful. Using an autopoietic, self-referential systems approach means that understanding multiple constructions is constrained neither by a subject-object duality nor by a focus upon order. To reconcile multiple constructions of the environmental crisis one must determine what self-referential distinction guides the observation of the observing system that constructs the crisis.

Niklas Luhmann's theory is premised upon complexity. Because it is not possible at any moment to connect every element with every other element "complexity forces selections either for or by the system because all the possibilities that the world offers cannot be actualized, certainly not simultaneously and not even in time" (Bednarz 1988). Over time, relations among elements are embedded in the accumulation of shared meanings. From this, Luhmann builds upon a logic of operations based on communication, which is the basis for understanding social systems. Each social system is an organizationally closed observing system.

Social systems function to process meaning through selection. When we communicate we are always making a selection among other possibilities; communication is always a reduction of complexity. Likewise, meaning is always contingent. The organization and structure of social systems both guide and constrain human abilities to make sense of our experiential world, our constructions of reality. Communicative selection produces emergent order; it transforms an improbable order into a probable (functional) one (Luhmann 1995).

Multiple observing social systems have emerged through a process of societal differentiation (Luhmann 1995). As social interactions increase, new social systems emerge to increase the societal capacity to process information. Modern Western society is dominated by functional systems (e.g., law, economy, education, religion, science). Function systems are organized around strict binary codes that both guide and constrain how we construct reality. The economic system, for example, is an organizationally closed (autopoietic) system. It constructs the environmental crisis only in terms of to pay/not to pay, for instance, who should pay to clean up the damage. Similarly, the law system only constructs the environmental crisis in legal terms, legal/illegal, or who is legally responsible to pay for the clean-up. Functional systems process the meaning of society in their own terms via coding, and no system binds another. The existence and persistence of organizationally closed binary codes is why and how multiple constructions of the environmental crisis are possible within a process of societal

evolution. In the absence of a single binding representation of society, constructions of the environmental crisis become fragmented along functional lines (e.g., power, money, scientific truth).

The function to be performed by social constructions is to reduce complexity, to select from among a number of different possibilities. A meaningful grasp of the world requires a purely momentary grasp of the world (Luhmann 1989: 17). The more complex the world turns out to be, the more the ability to communicate becomes improbable. What people need is a way to structure expectations to make it possible for selections made by one individual to be relevant to another. The construction of a "crisis" reflects a particular aspect of uncertainty. Crisis means that a situation has reached a critical stage, that there is an impending change (Merriam-Webster Collegiate Dictionary 1993). But we don't necessarily know what this change will bring; crisis symbolizes a state of uncertainty.

How does society cope with a future about which nothing certain can be discerned, only what is more or less probable or improbable? Constructions of crises function as part of society's "immune" system. They enable society to deal with gross uncertainty without collapsing upon itself. Constructions achieve simplification by anticipating what is possible, by stabilizing possibility. Stabilizing possibility both facilitates communication and acts as a catalyst for communication. Constructions, as generalized symbolic media of communication, make it possible to share meaning with different people in different situations, which in turn allows people to come to the same or similar conclusions. Coming to similar conclusions is a matter of selection. Terms like "environmental crisis" include a motivating factor that facilitates a process of agreement merely by the use of the term. Truth, love, money, and power are examples of similar terms.

The construction of the environmental crisis enables society to remain constant and to change at the same time. "Structures permit systems to maintain identity while their processes are relieved of point-for-point correspondences to changes in the environment, i.e., systems are not required to react instantaneously to every environmental change" (Bednarz 1990). Truth emerges as a compression of uncertainty.

Negation is very important in the communication process. The possibility of being "wrong" can never be negated. "Negation is a reflexive process. This means, of course, that it can be applied to itself. Everything negated in an act of selection is negated only provisionally because this act can be negated and the initially negated possibilities re-actualised" (Bednarz 1988: 6). The generalization of symbols, such as "the environment" and "the environmental crisis," provides a medium additional to everyday language that increases the societal capacity for dealing with complexity while retaining the possibility of being wrong. Multiple constructions of the environmental crisis, therefore, are primarily semantic devices: "connections between the complexity of the world on one hand and the socially regulated processes for differentiating and connecting multiple selections on the other" (Luhmann 1979: 48).

A sociocybernetic theory of self-referential social systems accounts for multiple constructions of the environmental crisis because there are multiple ways to observe the environmental crisis. In scientific terms, the theory's basis of self-referential, observing systems transcends the constraints of a subject-centered worldview. More pragmatically, a

theory of multiple observing systems of communication provides a common platform for discussion among and across disciplines and practices. The remainder of the paper uses Luhmann's framework to examine recent debates about sustainable development.

SUSTAINABLE DEVELOPMENT: RECONCILABLE DIFFERENCES?

The scope of issues within the sustainable development debate is exceedingly broad, including health, wealth, poverty, power, water, air, energy, agriculture, youth, seniors, indigenous people, women, workers, and economy. The integrity of ecosystems is only one of many issues within the debate, but it is an issue that helps define the concept of sustainable development. The United Nations *Draft Plan of Implementation* for sustainable development states, "Human activities are having an increasing impact on the *integrity of ecosystems* that provide essential resources and services for human well-being and economic activities. Managing the natural resources base in a sustainable and integrated manner is essential for sustainable development" (UN 2002c: 14 *emphasis added*). The sustainable development debate is predicated on a construction of environmental crisis.

How a self-referential social system constructs the environment is implied in how the system constructs the crisis. For example, the way we construct the environmental crisis is contingent upon how we observe the environment. A look at the evolving conception of ecological integrity illustrates the interconnection. There have been distinct shifts in the way ecological integrity has been conceived (Manuel-Navarrete et al 2001). Manuel-Navarrete et al (2001) define three models of ecological integrity to illustrate the nature of shifting conceptions. Each is predicated on a different construction of the environment. In the first model, the Wildlife-Normative model, there is a clear division between science, society, and the environment. It was believed that scientists could prescribe an appropriate balance between human areas and pristine areas (i.e., untouched by humans) based on quantitative measurements. This first model deployed a deterministic approach to management of the environment in which crisis is understood as a decline in the percentage of pristine systems. As determinism waned a second model emerged: the Systemic-Normative model. The notion of pristine areas was replaced by one of complex ecosystems. The divisions among society, experts, and the environment were moderated by ethics. Adaptive management was focused on states of ecosystem integrity. Crisis was seen as a failure of management to minimize the threat of human systems to natural systems. In the third model, the Systemic-Humanistic model, a significant shift away from "expert management" of ecosystems takes place. Adaptive strategies are now predicated on preferred states of ecosystem health. Adaptive management is achieved not by rational science but through the negotiation of goals and objectives in a broader social context. The expert has been replaced by the narrator/facilitator. The environmental crisis centers upon conflict over preferred states, that is multiple constructions of preferred states, and of crises.

The shift of models away from a normal science concept of a pristine environment has been facilitated by a greater reliance on social processes (e.g., participation, facilitation, consensus). There has been a corresponding shift from deterministic control to adaptive

management, from predictability to unpredictability. These conceptual shifts within constructions of ecological integrity reflect worldviews increasingly conditioned by a sense of uncertainty. At a fundamental level, introducing uncertainty to an understanding of integrity is part of coming to terms with the ontological constraints of dealing with complexity. We no longer presume that there is a knowable pristine environment to which we should direct sustainable development.

The "loss" of determinism leads to multiple constructions of the environmental crisis because we cannot know what is the "right" answer to sustainable development. "[K]nowledge of the system is always incomplete. Surprise is inevitable." In response, we have opened the scientific process to participation. However, we end up with uncertainty on both sides of the equation: "Fundamental uncertainty is introduced both by our limited understanding of human and ecological processes". As a result, "[t]he quest for sustainable development poses new, deep challenges to the ways we define problems, identify solutions, and implement actions" (Gallopin et al. 2001: 221, 222, 221).

Constructions of the environmental crisis have thus far been viewed as first-order observations. That is, an observer (the subject) observing an object. Replacing the knowing subject with self-referential systems represents a shift from first-order to second-order cybernetics. A second-order observation takes a step back from the subject-object position. In second-order cybernetics the aim is no longer to construct a theory of observed phenomena but to include the observer in the domain of science (Umpleby 2001: 89). Including the observer marks a difference between first-order observations of constructions that *describe* the environmental crisis and second-order observation of social constructions recognising that a describer (i.e., the observing system) is implied in the construction. One is no longer seeking to understand the environmental crisis as an object, but seeking to understand the observing system that constructs the crisis, as demonstrated by Manuel-Navarette et al's (2001) observations of ecological integrity.

The work by Manuel-Navarette et al highlight a theoretical debate that underpins a broader discussion about sustainable development. The Brundtland Report, *Our Common Future* (World Commission on Environment and Development 1987), was a product of a growing global awareness of an environmental crisis and of a shift towards "common" global environmental action. At a global scale, the environmental crisis can be constructed as a single problem with a single perspective. That is, the problem can be constructed as society's common crisis of "the environment." On the other hand, an event like the United Nations' 2002 World Summit on Sustainable Development heightens our sensitivity to the possibility that there is not a single societal construction of "the" environmental crisis but that there are multiple constructions.

The UN event brought together tens of thousands of participants, including heads of state and government, national delegates and leaders from non-governmental organizations, businesses, and other major groups. The purpose was "to focus the world's attention and direct action toward meeting difficult challenges, including improving people's lives and conserving our natural resources in a world that is growing in population, with ever-increasing demands for food, water, shelter, sanitation, energy, health services and economic security" (UN 2002a). If there were a single societal understanding of *the* environmental crisis, an event to bring

together tens of thousands of people "to reverse the continuing degradation of the global environment" (UN 2002b) would be redundant. Our common society would know what to do. Rather, it is the possibility of multiple constructions of the environmental crisis that brings so many people to a world summit on sustainable development.

The sustainable development debate reflects a number of societal processes. On the one hand, our *awareness* of an environmental crisis has been elevated as new concerns like global warming and ozone depletion are increasingly supported by "scientific" research. Correspondingly, as discussed above, *constructions* of the environmental crisis have evolved. Introducing uncertainty sensitized scientists to the influence and role of human values within the scientific process and has sensitized people to the limits of science. In effect, the summit on sustainable development aimed to reconcile multiple constructions of the environmental crisis.

A sociocybernetic approach, which is based on the presumption of complexity, lends insight into how reconciliation might be possible. All communications begin by drawing a distinction (Luhmann 1995). Thus, an analysis of the sustainable development debate can be directed by differences, not only by identities. Questions need not be asked only about who is at the table, but also about what distinctions are being made? Observe the observers. What distinctions are the observers making when defining problems and issues of sustainable development? In other words, to reconcile multiple constructions of the environmental crisis one must determine what distinctions guide the observations of environmental crisis.

An exercise in identifying all of the distinctions and cross-referencing the distinctions with all the participants of the UN Summit (and participants can use more than one distinction) is a cumbersome, if not impossible task. Inevitably, the self-referential nature of the construction of the environmental crisis leads to paradox and tautology, thus blocking further analysis. An easier task is to start at the "top" with the opening statement of the UN Summit's *Draft Political Declaration*. "We, Heads of State and Government, assembled at the World Summit on Sustainable Development in Johannesburg, South Africa from 2-4 September 2002, declare our commitment to build a humane and caring global society in pursuit of the goal of human dignity for all" (UN 2002d). A brief analysis of the UN's statement illustrates how distinctions guide the sustainable development debate.

The stated goal of the UN is to build a "humane and caring global society." It is very difficult to disagree with this statement. But what does it mean? What is "global society"? Does society mean every living person? Is it only people, or does it include the natural environment? What is the relation between society and the natural environment? If society includes all people, what is human dignity? Is human dignity premised upon equality or are some forms of inequality presumed? Urry (2000) argued that historically and conceptually society meant a form of order through a nation-state, with clear territorial boundaries and a system of government. Mann (1993: 11, cited in Urry 2000) defined "global society" not as a unity but as a single power network. Given these possible interpretations of society, among others, it is not clear to what building a "humane and caring global society" refers.

Situating the sustainable development debate within Luhmann's theory of societal differentiation provides a platform to consider what it might mean (or not mean) to build a global society. According to Luhmann (1982; 1995), Western society is dominated by functional systems (e.g., law, economy, education, religion, community, family, science). Each

functional system processes the meaning of society in its own terms, and no system binds another. The lack of a single binding understanding of the world is why and how multiple constructions of the environmental crisis are possible within the sustainable development debate.

Similarly, how a crisis is defined prejudices how a crisis can be addressed. For instance, if we choose to use power as a basis for distinguishing the problem of sustainable development we are restricted to finding solutions predicated on re-distributing power. Likewise, if we see sustainable development as an issue of wealth-poverty, then we are restricted to finding solutions predicated on re-distributing wealth. Within this sociocybernetic framework we can understand how each selection we make, each distinction, pre-determines the solutions available to us.

What distinctions guide the sustainable development debate at the World Summit? Sustainable development as set out in the opening statement of the *Draft Political Declaration* is distinguished as a societal goal or, the converse, sustainable development is a societal *problem*. The distinction is between society and environment. Defining the problem as societal raises a fundamental question: Who speaks for "society"? Does the United Nations speak for society? In the *Draft Political Declaration*, it appears that heads of state and government speak for society: "As representatives of the world's peoples we assume a joint responsibility" (UN 2002d).

Can heads of state and government speak for all of society? In a functionally differentiated society the response is no, they cannot speak for society; they are political representatives and can only speak for the political system, not for other systems, such as the economy or law systems. In a functionally differentiated society there is not one body (i.e., system or sub-system) that represents society; there are only multiple observers of society and "society's problem." The *Draft Political Declaration* could be stated more accurately: "As *political* representatives of the world's peoples we assume a joint responsibility *for political solutions*".

The autonomy of functional systems is evident in the on-going debate about sustainable development. The UN's *Draft Plan of Implementation* states: "we commit ourselves to undertaking concrete actions and measures at all levels and to enhancing international cooperation, taking into account the Rio Principles, including, inter alia, the principle of *common but differentiated* responsibilities" (UN 2002c: 1; *emphasis added*). A few points down in the plan, common but differentiated is implemented as "each country has the primary responsibility for its own sustainable development" (UN 2002c: 3). Common but differentiated is also characterised as a difference between the rich and poor (UN 2002d).

In the UN's explication of common but different, we can see the implications of living in a functional society. The principle of *common but differentiated* responsibilities made explicit in the UN documents can be interpreted as common at the societal level and differentiated by functional systems, for instance, economics, politics, law, and further differentiated by sub-systems (nation-states). Specifically, we can interpret "common" to be differentiated by politics. Hence, responsibility is assigned to countries.

We can see the exercise of political autonomy in the opposition of the United States to the Kyoto Protocol on climate change. In President Bush's remarks on global climate change,

he referred to the "earth's well-being" as an issue important to America and "to every nation in every part of our world." Further, "We recognise our responsibility and will meet it – at home, in our hemisphere, and in the world" (2001). The United States' opposition is well within the bounds of "common but differentiated" and the United States is very clearly speaking for itself, in compelling contrast to the UN's position as representing a "global society."

Quite simply, the UN claim to represent society is not binding in a common but *functionally* differentiated society. In the absence of a single binding representation of society, not only the constructions of the environmental crisis but also the responsibilities for addressing the crisis become fragmented along functional lines. We may have a common crisis, but we also have different ways of interpreting the problem and different ways of assuming responsibility for the problem.

Multiple constructions of the environmental crisis can be examined not only by *who* is defining the crisis, but also by *how* the crisis is defined. The emphasis shifts from identifying participants to understanding what distinctions participants (observing systems) make. At the World Summit, the *Draft Political Declaration* states that the heads of state and government are the "representatives of the world's peoples" and assume joint responsibility for sustainable development (UN 2002d: 1). As observers, we may ask: who (or what observing system) made this distinction?

CONCLUSION

Sustainable development has been defined in the Brundtland Report as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" and one stated objective refers to defining "shared perceptions of long-term environmental issues" and "aspirational goals of the world community" (World Commission on Environment and Development 1987: ix). Perhaps we can learn more by understanding our differences than we can by seeking consensus through "shared perceptions" or focussing on action by a "world community."

It has been argued in this paper that acknowledging differences is a prerequisite to addressing sustainable development because the environmental crisis must first be defined by a difference. Luhmann's theory, if accepted as a theoretical framework for understanding society, provides a broader set of criteria by which we can understand sources of conflict as differences of observation embedded within the sustainable development debate. "Sociologists, then, have to look for the structural conditions and limitations that frame the frames within which observations and descriptions operate" (Luhmann 1993: 778).

Are multiple constructions of the environmental crisis reconcilable; in other words, can they be made consistent or compatible? The answer is both yes and no. Observing systems are constrained by how they make sense of the experiential world. Only the observing system determines how it relates to its observations. The system determines what is and what is not a meaningful difference, that is, a difference that makes a difference. Difference, in the strict sense as it applies to the organization of observing systems, cannot be reconciled. Each observing system is organizationally closed. Each system draws distinctions that are coded;

they cannot see what their coded identity cannot see. Systems do interact with other systems. The interaction is not a process of reconciliation but of disturbance, or resonance (structural coupling) as Luhmann (1989) calls it. In the sociocybernetic sense, constructions become compatible, but observing systems cannot change the way they observe.

Not all sociologists will agree with a sociocybernetic approach based on Luhmann's framework. The organizational closure of systems can be seen to create unnecessary boundaries that reinforce points of conflict. Further, one can argue that irreconcilable differences are merely tautological outcomes of these unnecessary boundaries. Also, the abstract concepts of social systems of communication can seem too far removed from action and the everyday practicalities of dealing with discrepancies of power and the threat of poverty. On the other hand, the same focus on communication can be seen as more pragmatic because the discussion avoids ideological debates by focussing upon the effects of communication as the process of coordinating how people and groups negotiate similarities and differences.

The aim of this paper has been to attempt unity at a different level of abstraction than available via deconstruction. Within the debate about sustainable development, Luhmann's approach frames the question: who (that is, which system) has a solution that privileges society? We can see that ideological positions (e.g., capitalist versus socialist) and positions of interest (e.g., health, poverty, food) are not a sufficient basis for either difference or reconciliation. These are positions of identity, not positions of difference. Identities have to be constructed, but by whom? By what distinctions?

A sociocybernetic theory of self-referential social systems accounts for multiple constructions of the environmental crisis because there are multiple ways to observe the environmental crisis. Self-referential observing systems provide an alternative to a subject-centred approach. More pragmatically, a theory of multiple observing systems provides a framework that makes understanding and negotiating differences possible. The operative mandate is: observe the observing social system.

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LUHMANN SEMIOTICIZED

Søren Brier[*]

$\mathbf{T}$he present article[1] reports results from ongoing work on the project, *Cybersemiotics*, part of which has been published in semiotic, informational, systemic and cybernetic journals, but now for the first time presented in a sociocybernetic context. The article is a short overview of the model.

SELF-ORGANIZATION, CLOSURE AND MEANING

The combination of systems theory and cybernetics was necessary to make a theory pertaining to organization, function, and control of mechanical, living, and human systems. This combination was instrumental in producing the theory of information from which information science grew. Through modern second order cybernetics, autopoiesis theory, and chaos and complexity research we have developed a view of the body and the mind as self-organizing and self-producing systems. These scientific and materialistic approaches seem to have accepted a statistical information concept as a tool in describing the organizing ability of nature, including the role of DNA. But even the cognitive science information-processing paradigm used in cybernetic and systems approaches does not have a theory of signification and meaning that encompasses the phenomenological view. A theory of signification is necessary to understand how signs are created and become meaningful. Only the semiotics of Charles Sanders Peirce (1931-1958) includes non-intentional signs, and as such, signs of the body and nature.

Human life is lived in meaning. As Niklas Luhmann (1995) states, we use meaning to reduce complexity. One aspect of stress is being overwhelmed by complexity. Luhmann (1990) argues that we are composed of three major closed, autopoietic systems: a biological system, a

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[1] Epistemological and ontological analysis, developed as a foundation for the model, can be found in Brier (2000b, c, 2001a, 2002a and 2002c). An application of cybersemiotics in library science and information seeking can be found in Thellefsen, Brier, and Thellefsen (2003). Further documentation and argumentation can be found in the selection of papers included in the appendix.

psychological system (that does not speak, a "life world"), and a socio-communicative interpersonal system. A symbolic iconic model is shown in Figure 1.

Unfortunately, theories of meaning are scarce in the sciences and technology and usually left to continental philosophy. Contrary to this division, Peirce's semiotics is a doctrine of signification, thinking, and communication with the capacity of encompassing modern scientific information theory. Peircean semiotics is unique in its ability to engage aspects of the sciences, humanities, and social sciences. In biosemiotics, developed by Thomas Sebeok (1976, 1989) on this basis, it becomes a theory of meaning for all living systems.

Signification processes combined with the environment are seen as creating a signification sphere of meaningful objects in the cognitive apparatus of livings systems (see Figure 1). This is what Jacob von Uexküll, before the birth of biosemiotics, called the animal's "Umwelt", and Maturana and Varela (1980) call its "cognitive domain" (which is built through the "eigen functions" of the cognitive apparatus, as Von Forster would say). Simultaneously, on all levels, there are internal and external communication and signification processes taking place.
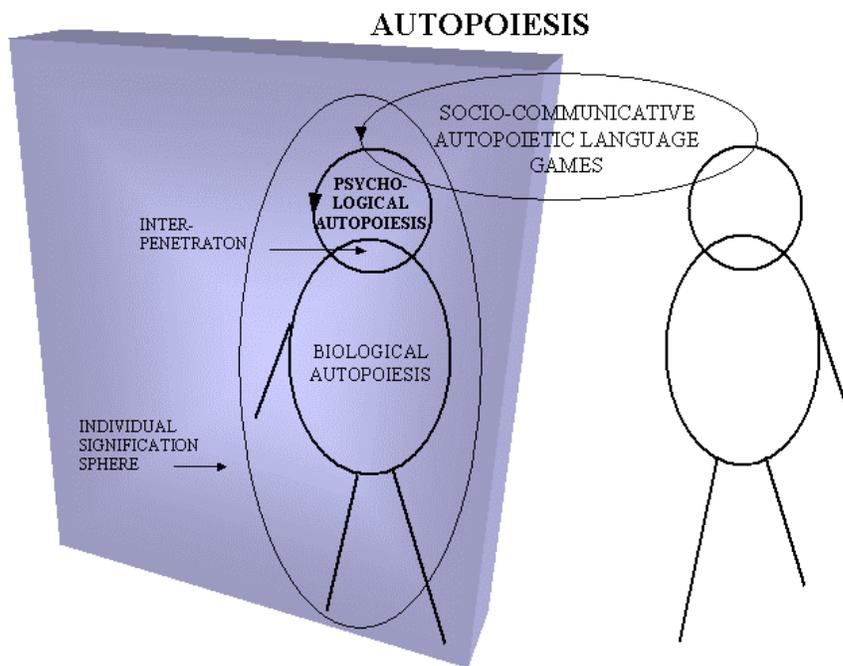
Figure 1: Three organizationally closed systems working separately make communication possible. This figure is the first in a series visually summarizing my theory. They are not the theory itself but very simplified symbolic icons that hopefully can provide an easily remembered visual overview. But one must not forget that they are only symbolic iconic pictures of the system in relation to the body. Psychological processes, for example, are not only in the head and so on. The sphere of signification is the biosemiotic term for Uexküll's "*Umwelt*" (Uexkull 1934) and Maturana and Varela's (1980) "cognitive domain". I have imported Wittgenstein's term "language games" describing what goes on in Luhmann's socio-communicative systems. Their surroundings are human bodies interacting with nature and each other in "life forms".

When biosemiosis is combined with Luhmann's systems theory, it creates what I call "cybersemiotics" and becomes a theory of biological, psychological, and sociological-cultural meaning. It indicates that signification and communication processes work on all three levels in closed systems. These systems are like blind boxes to one another, and can only function through interpenetration. Thus, language offers classifications of emotions, but cannot control the reality and correctness of the classification, as in "am I really in love, or is it just a stomach ache?" Emotions offer a classification of awareness of biological situations, both externally and internally, which they cannot control as such; for instance, "I feel uncomfortable, is this situation dangerous? Do I want to fight or to run?" About internal biosemiosis Sebeok wrote:

> Semiosis is the fulcrum around which another emerging interfacial discipline recently dubbed "semio-immunology" or "immunosemiotics" turns. The central problem immunologists keep struggling with is how the healthy immune system manages to recognize and respond to an almost infinite number of alien organisms and yet fails to assail components of self. What has become reasonably clear is that a single line of defence against potential pathogens is not enough and that there are dissimilitudes between antigen recognition by T cells and that by B cells. Jerne has proposed … a model of particular interest to semioticians, including especially linguists, with his claim that the immense repertoire of the vertebrate immune system functions as an open-ended generative grammar, "a vocabulary comprised not of words but of sentences that is capable of responding to any sentence expressed by the multitude of antigens which the immune system may encounter." The human immune system consists of about 10^{12} cells, dissipated over the entire body, excepting only the brain, but the former and the nervous system are known to exercise pervasive mutual sway one over the other by means of two-way electrochemical messages (Sebeok 1999: 390).

Thus inside the body there are endosemiotic processes (Uexkull et al 1983) a work among the nervous, the immune, and the hormone systems. Sebeok writes about the endosemiotic processes: "The endocrine and the nervous systems, as noted above, are intimately fastened together via signs. As for the neural code itself, semiosis is what neurobiology is all about" (1999: 391).

But there is also the level of the inner life of the pre-linguistic mind or psyche. In the inner "life world" of Merleau-Ponty, wordless (pre-linguistic) phenosemiotic processes of emotions, will, and images play themselves out. I agree with the phenomenologists that there is an inner pre-linguistic world that is neither rational nor irrational, neither objective nor subjective. It is the "*innen welt*" of Uexkull that interactively produces the *Umwelt*. In a modern semiotic understanding this whole area is, although pre-linguistic, still semiotic! It is even biosemiotic, as it is the product of mostly un- or pre-conscious processes in perception stemming from bodily processes and from social interactions (the "habitus" of Bodieau).

Between the endosemiotic levels of the body's own biosemiosis and the phenosemiosis of the mind there is a connecting system of what I call *intrasemiotics* (see Figure 2).

We assume that the sign vehicles are somehow chemical, but we still know very little about how the mind-body interaction functions. In a Peircian philosophy it is all in a semiotic framework, not denying a physico-chemical level, and an information level of signals

(protosemiotic differences, not triadic and not with meaning). The triadic organization of the autopoietic and duel-coded (digital in the gene, analogous in the body) self-organization of the living, brings forth the semiotic qualities of meaning that express the immanent possibility of Firstness existing inside matter. In Peirce's triadic philosophy, Firstness is "unmanifest qualia", pure feeling, logic, and basic forms in mathematics that only manifest through their connection with Secondness (force, will power, differences and resistance) and become stabilized through Thirdness, which refers to regularity, habits of nature (laws), and understanding. The dualistic absolute difference between mind and body (seen as matter) is avoided. The worldview is pragmatic and evolutionary through the triadic process that leads to new emergent levels.
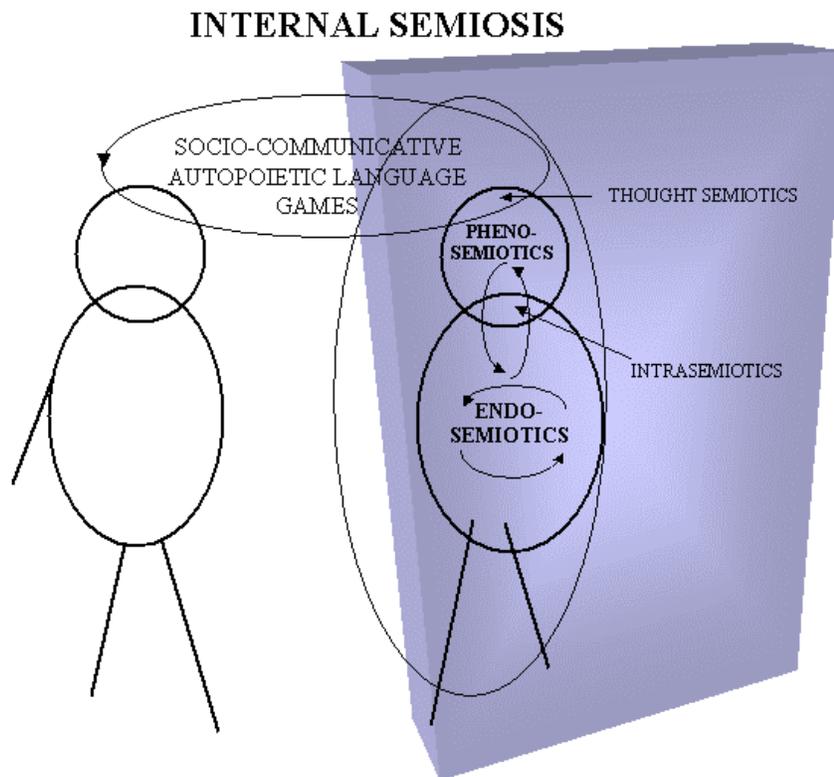
Figure 2: The relation between phenosemiotics (prelinguistic experiences), endosemiotics, thought semiotics, and intrasemiotics (semiotic interaction between the biological and the psychological levels, now reformulated in cybersemiotic terms).

I have in this way constructed a semiotic analogue to Luhmann's three levels of autopoiesis. The semiotic processes occur within the autopoietic systems. Where they interpenetrate, communicative systems like intrasemiotics appear, which are created inside; outside sign games appear as the exosemiotic aspect.

COMMUNICATIONAL LEVELS

Peirce's semiotics needs theories of self-organization, non-trivial systems, closure, autopoiesis, and structural couplings to explain the role of embodiment in conceptualization. This can be delivered by Luhmann's system thinking that draws on autopoiesis and second order cybernetics' theories of closure, structural couplings and self-organization. In this framework, structural coupling occurs between the organism and its significant surroundings, thus creating the *Umwelt*. Between two autopoietic systems, mutual structural couplings can be created to make a channel for signal-based communication. This is what Maturana calls "languaging". Next I extend Wittgenstein's idea of language games on the linguistic level to a concept of sign games at the level of motivated animal communication, as described by the ethologists. Here the meaning of signs is tied to significant life functions, such as mating, hunting, defending, fleeing, food searching.

Cybersemiotics is, then, a trans-scientific theoretical framework (see Figure 3) that places:

1. The languaging (Maturana) of reciprocal structural couplings at the level of signals and information. These processes are considered protosemiotic.
2. The instinctual, but motivated sign-games of living systems on one level, and the interpenetrations of the biological and psychological autopoiesis at another level.
3. The language games of humans on a third level, coinciding with Luhmann's socio-communication.

Semiotics starts with the process of knowledge, asking how signification is taking place in living systems making perception and cognition possible. Peirce's semiotics unites our explanatory schemes of deduction and induction through abduction within the process of semiosis. Peirce suggests that we look at triadic semiosis as the fundamental process of reality. Consciousness is built of semiotic processes. As the first step, cognition is mostly established through abductive meaningful processes and after that follows deduction and inductive testing.

Biosemiotics acknowledges that semiosis is an essential part of all living systems and that semiotics should have the sign games of all living systems as its subject area. Again the problem of total explanation arises: can we go on from here to a pan-semiotic view without wanting to explain too much?

It is my view that the advantages of using semiotic concepts are lost if we make everything semiotic, because then nothing is not semiotic. We have then overstretched the concept and made it uninteresting for pointing out significant differences to us. It is also against Peirce's triadic category teaching to make signs primary as the three categories form the basic parts of the foundational processes of reality.
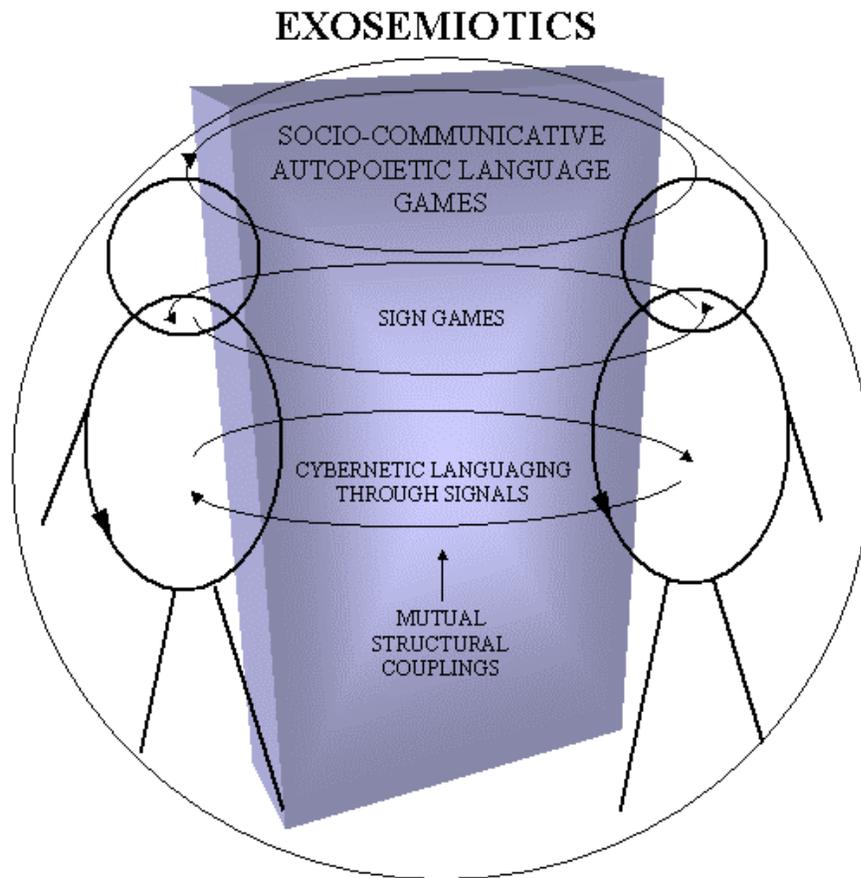
EXOSEMIOTICS

Figure 3: The three different levels of communication systems described in cybersemiotics. At the basis is the informational exchange of signals of orientation and other reflexes. On the next level are the biosemiotic sign games of all living systems, mostly within the species, also valid for the basic biological drives in humans. Then there is the level of language interchange as dialogue between self-conscious persons, "language games" as Wittgenstein (1958) calls them.

I have argued that it seems more fruitful to accept and work with five different levels of interaction in nature, but not necessarily assume any evolutionary causal links between them. This means that I do not assume that one level gives rise to the other or that causality goes from matter to mind only. These five levels are:

1. A non-manifest level with hypercomplex or chaotic interactions. The concept of vacuum in Quantum field theory is one attempt from science to describe this state but without Peirce's synechistic frame. Peirce calls it Firstness and it contains qualia and pure feeling.
2. An energy level with energy based causal interaction by natural forces.
3. An informational level with signal and/or code causality that creates self-organization.
4. A semiotic level with sign game causality within and between living systems based on biological and psychological meaning.

5. A linguistic level with language-game-causality based on conceptual linguistic meaning between conscious social systems.

The point then is that the description of these levels did already exist in different areas of modern science, but they had never been connected in one theoretical framework that included the humanities and the social sciences, unless you believe that this is what eliminative mechanistic science has accomplished.
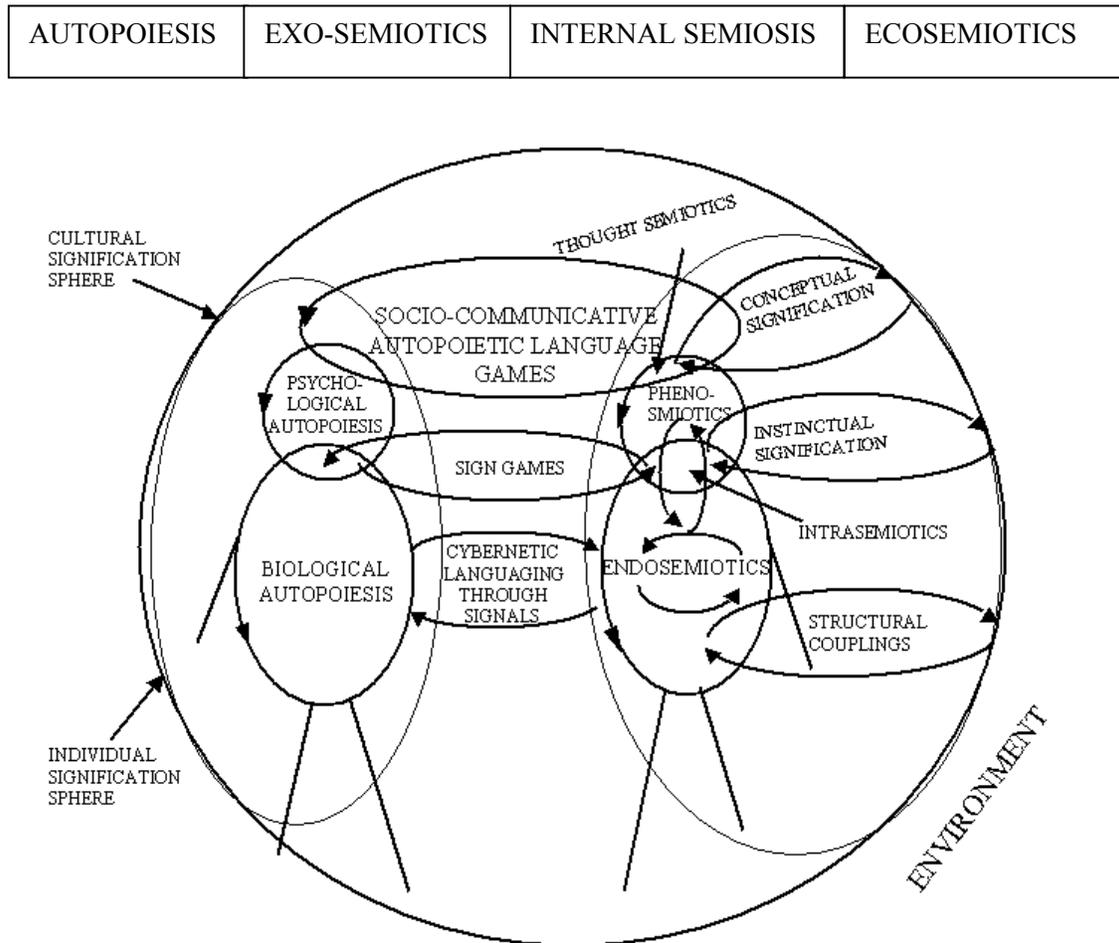
THE CYBERSEMIOTIC MODEL

Meaning is seen as coming from semiotic processes in the body and the psyche, their coupling to the environment, and between two individuals in the sharing of signification spheres that actualize mutual understanding. Peirce's semiotics is special in relation to Saussure's as it allows semiosis with non-intentional aspects of nature and culture. Thus, on all levels there are both an eco-semiotic and exosemiotic component placing humans in both nature and culture at the same time.

Figure 4 illustrates the cybersemiotic model built up so far. On the left side we observe the cybernetic-autopoietic-functionalistic processes. Left of middle we see the communicative aspects or the Exosemiotics between two organisms and right of middle the internal semiotics of the organism. Finally, to the far right we look at the organism's perceptual connections to the environment, ecosemiotics, contributing to its signification sphere.

The functional and the semantic aspects, then, are coupled for the first time here in a theory that connects biology, psychology and sociology with a theory of signaling, signification, cognition and communication.

The cybersemiotic approach works by making synergies between the socio-communication systems theory of Luhmann with its basis in Spencer-Brown's logic of distinction, its inclusion of Maturana and Varela's theory of autopoiesis and Heinz von Foerster's theory of second order cybernetics on one hand, and on the other hand, Peircean pragmatic semiotics, in the form of the new biosemiotics of Thomas Sebeok (including all living systems and the human body in the semiotic sphere), combined with Lakoff (1987) and Lakoff and Johnson's (1999) embodied cognitive semantics and Wittgenstein's language-game theory.

AUTOPOIESIS	EXO-SEMIOTICS	INTERNAL SEMIOSIS	ECOSEMIOTICS

Figure 4: Cybersemiotic model classifying different types of semiosis and protosemiotic processes: The model is a cybersemiotic development of the Luhmann model in Figure 1. The localization of the processes has nothing to do with the actual bodily locations as the head, for instance, is also a part of the biological autopoiesis, and has endosemiotic processes. To limit the complexity, I have placed all the cybernetic-autopoietic concepts on the left person and all the semiotic ones on the person to the right. But all concepts concern both persons. Each person is placed in a signification sphere. When these are combined through socio-communicative autopoietic language games, a common signification sphere of culture is created. One part of ecosemiotics' signification is based on the linguistic processes of conceptualization and classifications. Underneath language games is the biological level of instinctually based sign games, and under that, the cybernetic languaging game of the coordination of coordination of behavior (of two black boxes). Thus, ecosemiotics also has a level of bio-psychological or emphatic signification, as well as a level of structural couplings, which the organism, or rather the species, has developed through evolution. If, from this model, we go back to Figure 2, we can now place the linguistic motivations in the area of thought-semiotics and the animal motivation in the intra-semiotic area.

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REVIEW

***Understanding Systems: Conversations on Epistemology and Ethics* by Heinz Von Foerster and Bernhard Poerksen. Translated by Karen Leube. New York, Boston, Dordrecht, London, and Moscow: Kluwer Academic/ Plenum, 2002.**

1. The Authors and the Book

Understanding Systems, a delightful, precious little book, was published in the summer of 2002, only a few months before Heinz von Foerster, born in 1911 in Vienna, died on October 2, 2002 at the age of 90 in his home in Pescadero, California. Originally a physicist, he immigrated to the United States in 1949 where he had the chance to join the circle of scientists who came together in the so-called Macy Conferences, developing what came to be cybernetics. In 1957 he founded the Biological Computer Laboratory (BCL) at the University of Illinois. He directed the BCL, which provided an inspiring environment for numerous visitors and creative discussions, until his retirement in 1976. Heinz von Foerster was one of the founders of cybernetics and in particular the father of so-called Second Order Cybernetics, which can be defined as "cybernetics of cybernetics" or a kind of cybernetics that takes into account the scientist himself as an observer of his field of investigation along with his feedback relations with the phenomenon investigated. Thus a second level is introduced, hence Second Order Cybernetics.

If the scientist as an observer is no longer neutral and external to his object of investigation, but influences this object and is being influenced by it in turn, it becomes of primary interest what happens in such, more or less closed, feedback circles, that is, how they are self-organizing. A central topic in the work of Heinz von Foerster has always been self-organization, but also the consequences which result from the fact that the scientist cannot be considered an objective observer anymore, but has to be seen as somebody who is actively involved in the very phenomena he investigates. This raises the question of responsibility and ethics and the associated questions of how (scientific) knowledge is possible and what scientific knowledge is under such premises.

The subtitle of this book, "Conversations on Epistemology and Ethics", points precisely to the latter two issues. To develop his thoughts on self-organization and cybernetics, Heinz von Foerster, being a physicist who had worked on the intricacies of quantum theory, was obliged first of all to develop concepts of epistemology adequate to take into account these issues. This made him one of the prominent founders of constructivism, along with Ernst von

Glasersfeld. Constructivism implies that knowledge does not come from some outside, objective, ontological reality, but is constructed inside the respective system, for instance the human being itself. These are topics von Foerster had developed in numerous publications and lectures, often drawing on mathematical examples and formalisms.

The present book is quite different in this respect. Heinz von Foerster, sometimes called the "Socrates of cybernetic thought", presents the central points of his works in a truly Socratic way. This book is the documentation of a series of conversations with Bernhard Poerksen, a journalist from Hamburg specializing in science reporting. He first interviewed von Foerster in 1994 at an international conference in Hamburg. This dialogue with Poerksen, which started in Hamburg, was continued later on in von Foerster's home in California in 1997 and led to the present text (first published in German by Carl-Auer Systeme Verlag, Heidelberg). The translation is excellent and does not leave any indication of the fact that the original text was not written in English. This book provides a concise and understandable overview and summary of the key issues and main lines of Heinz von Foerster's thinking about cybernetics and constructivism. Bernhard Poerksen being no less Socratic than his counterpart, the conversation documented is quite critical and brings the most difficult issues to the point - without mathematics.

2. Contents

The title of the English edition hits the point and very precisely reflects the contents of the book, which is about understanding systems and in particular self-organizing systems and the second order view of systems and cybernetics. Such an understanding requires an appropriate epistemological basis. This is discussed and developed in the first of the five parts into which the book is divided, "Images of Reality...". In this part, which included four chapters and fills more than a third of the whole book, von Foerster and Poerksen discuss: 1. Biology of Perception; 2. Facets of Truth (including the ethical imperative resulting from constructivism and the loss of the Archimedean point of truth and cognition as a consequence); 3. The Danger of the Label (which both reveals the risk of reification and ontologization as a consequence of language and labels, along with the impossibility to get around language and labels); and 4. Explaining the Explanation (making clear that cause and effect as well as "immutable" laws of nature are human constructs. In the last part of this chapter the important concepts of trivial and non-trivial machines (=systems) and the chances and problems implied in interacting with them are explained).

This paves the way to the second part, "Perspectives in Practice...". In this part, consequences of von Foerster's epistemology and cybernetic thinking for applications and practical life are developed and illustrated by discussing four different fields: teaching and education, psychotherapy, management, and communication (including mass media).

The third part, "Cybernetics...", takes the reader back to theoretical issues like circularity, the fundamental principle of cybernetics, and the discussion of people and machines, computers and minds, and the cybernetics of cybernetics. The last chapters of this part resume the problem of epistemology, perception, and truth.

Taking Heinz von Foerster's cybernetics of cybernetics and the role of the observer it implies seriously, it is only consequent that Poerksen ask about the observer and scientist who has developed and professed the theories discussed so far. Hence the fourth part of the book is devoted to "Biographical Excursions...", the childhood and youth of von Foerster, his life during the Second World War and the post-war period, and to his subsequent scientific career in the New World, America.

The book is rounded off by a fifth part on "Knowledge and Ethics...". Here the two discussants analyze and clarify what is possibly the most important consequence of Heinz von Foerster's constructivism and cybernetic theories. This is that a human being constructing the world is also responsible for this construction and cannot escape from that responsibility. The responsibility, moreover, is very real and practical as all action and life of a human being is based on its cognitive constructs. With regard to responsibility, this is a human condition very similar to what Sartre had described with regard to freedom. Human beings cannot escape from it; they can only develop and cultivate a false consciousness in order to remain unaware of it. A lot of von Foerster's efforts in writing and talking were devoted precisely to destroying such delusions.

3. Strengths

The book is a concise and entertaining introduction to Heinz von Foerster's philosophy and scientific work. His conversations with Bernhard Poerksen, a highly competent counterpart, make it easy and enjoyable to read, without loss of scientific and philosophical depth and rigor. This lively and fascinating dialogue, illustrated by quite a number of anecdotes, is intriguing with the most important concepts of cybernetics, second order cybernetics, and constructivism explained in a non-technical and non-mathematical language. The reader will find the book difficult to put down.

The dialogue carves out very well von Foerster's key concerns, which it is essential to keep in mind in order to understand what might appear as one-sidedness or as deficiencies and limitations in his theories. Poerksen, who asks the right questions throughout the book, brings this out excellently; however, he does not always get very clear answers. This may be because it is part of von Foerster's didactics. The latter explicitly states: "My objective is to cast doubt". He wants to be a Socratic who breaks up petrified views and thinking as codified, for instance, in conventional science and philosophy. That is why he argues so strongly against ontologies, against reifications, against definitions shutting off other possibilities of thinking and other views of the world, and, as one of the inventors of constructivism, objects to being called a constructivist. Instead, he makes a case for freedom and responsibility, for a world of wonder and surprise, and wants to encourage his readers not to limit thinking but rather to think unconventionally. His ethical imperative is: "Act always as to increase the number of choices".

Heinz von Foerster bases his arguments on often highly innovative scientific cybernetic findings and considerations. He understands, for instance, "computing" in a much wider sense than numerical calculations and provides arguments that knowledge and truth are not static commodities (to be sold through the Internet, for example), but processes without a final end-

point. According to his view, human knowledge is not stored in the memory like on a hard disk of a computer, but it is constantly produced and re-produced. This goes along with the idea that logic, as well, is not a static set of rules of nature, but a process invented by humans, and this includes paradoxes and self-reference. The latter are phenomena that are banned from conventional logics.

No wonder, that for Heinz von Foerster ontology is a "terrible idea" and that he objects to putting things into fixed and clear-cut categories and nice definitions in order to avoid ontology and to keep human thinking as open as possible not blocking any possibilities of choice. This is a very important plea against the conventional sciences of ultimate truths and immutable laws of nature, but also against ordinary people's quest for absolute certainties and perfect recipes for all and everything. Von Foerster and Poerksen develop in their dialogue the alternative of a truly "modern" man, who is a "kybernetes", a helmsman of his ship of life in an ever-changing world of uncertainties. It is a concept of man that fits the contemporary world, which offers little certainty and no Archimedean points anymore.

This is roughly the message Heinz von Foerster distills from his lifelong scientific work and which he wants to bring across in this book.

4. Weaknesses

It is evident that such a program cannot be worked out in every detail in only 160 pages. Von Foerster does not and cannot develop all the ideas to the end and not all of Poerksen's questions get a fully satisfying answer. In particular, the examples of application in the second part of the book provide valuable insights and suggestions with a practical orientation, but still tend to remain far from being consistently practical and fully down to earth. The insistence on avoiding definitions and labels, which is perfectly suitable to open up the way to new thinking, is an obstacle, however, to resolving practical problems and to action. Poerksen stresses the practical necessity of "labels" and definitions and justly tells his partner "You are exaggerating!" Von Foerster admits the point. Not appreciating "jargon" he risks, however, to question without providing answers and (practical) solutions. Without fixing concepts and ideas, at least temporarily, and without eliminating possible choices, decisions and actions are not possible. Yet this is not Heinz von Foerster's principal concern here.

While these issues may be considered to result from a lack of space or from von Foerster's particular concerns and didactics, some other problems, which Poerksen points out very well, have to be considered as unresolved fundamentals that require further development.

A first point concerns the very roots of constructivism. The first and evident alternative to an ontology, which von Foerster abhors, is solipsism. If an objective external world, independent from myself as an observer, does not exist, it is only myself who exists. This is what solipsism says. Like other constructivists von Foerster also refutes solipsism, but avoids an answer to the question, "What IS out there?" While other constructivists, like von Glasersfeld, tell us "We cannot know, but if our knowledge leads to practical success, it cannot be all wrong", von Foerster does not or at least he does not clearly accept such a practical "criterion of truth". If there is no such criterion, however, complete arbitrariness (which

contradicts all our practical experience) and solipsism seem unavoidable.

A second point concerns this solipsism. von Foerster cannot avoid it by referring to a practical criterion of success like other constructivists (or to "viability", as von Glasersfeld calls it). Instead, he refers to analogy. He argues that a human being experiences other humans behaving just like him or her; hence, they must be just as "real". "We" invent our world, and others do the same. It is not discussed, however, who or what is "we", and why the others are "real", although invented. This situation is illustrated by a picture showing a man who has himself and other persons inside his head, and the others have in turn persons in their heads, like the Russian dolls. The analogy certainly works for the persons inside the first, most outer, head and the subsequent iterations. But the very first head is in an empty space on the page, what about it? While von Glasersfeld deals with this difference by distinguishing the most outer head as "epistemic self" from the other selves inside the head, von Foerster does not address this issue and only points to the "analogy".

Third, essentially as a consequence of the former two problems, von Foerster runs the risk of getting trapped in arbitrariness. With regard to his main objective to open up thinking to new possibilities and to do away with unnecessary constraints and limitations, he is certainly right in insisting on the freedom, responsibility, choices, and decisions of human beings. And yet, it is problematic to state that there is no right and wrong and that you simply "choose to accept" one thing or another, even if this statement is limited to certain categories of decisions. In spite of all freedom of choice a human being cannot live his life on a basis of arbitrary decisions and arbitrary ideas. It simply does not work, according to all the experience we have.

At these points, what Poerksen calls "exaggeration" (for a good cause, without any doubt) runs the risk of becoming counterproductive, reducing von Foerster's program of intellectual, and not only intellectual, liberation to an cerebral glass bead game which can hardly reach the level of action and practical life. Leaving everything open, possibilities of choice, definitions, etc., and rejecting all criteria for decisions is a fascinating strategy for contemplation paving the way for new thinking, but it is not yet a reliable basis for action.

This impression of a contemplative orientation is reinforced by the last part of the book. Here von Foerster describes the world as a world full of miracles and wonders and not as a trivial machine. This is quite contrary to popular beliefs, popular also among scientists, that the world is a machine and man can dominate, control, and repair it at discretion, once science is sufficiently far advanced. In a way, von Foerster is de-mystifying mysticism in a scientific, that is, cybernetic way, leaving open, however, at least for the time being the question of how to act in a world full of miracles.

These are issues which both require and deserve further development and explanation and which make comparisons and perhaps a closer integration of Heinz von Foerster's work with that of other constructivists and second order cyberneticians highly promising.

5. Final Assessment

On the whole, *Understanding Systems* presents in a nutshell a truly revolutionary view of human beings, their thinking, and the world they live in. It outlines a new way of thinking

with the promise of the possibility of providing a new orientation and a new strategy for life in a highly complex, highly dynamic, and highly uncertain world such as ours at the beginning of the 3rd Millennium. This, however, is not the guidance provided by Archimedean points, immutable laws of nature, and eternal truths. It is the orientation and strategy of a "kybernetes" traveling the oceans of life with their ever changing conditions, inventing and constructing ever-changing solutions to all the new problems encountered and doing this with the little equipment and resources available on board. This is what self-organization is all about.

Understanding Systems can be fully recommended to any reader who is interested in understanding the contemporary world or is seeking strategies for coping with it, irrespective of discipline or specialization. It is a well-rounded and sufficiently self-contained book which should be understandable in itself for the general reader as well, without requiring familiarity with other specific authors or other publications of von Foerster himself. To the specialist, however, it may serve as an excellent overall summary and clarification of many ideas and concepts, which are otherwise distributed over the numerous publications of Heinz von Foerster.

Bernd R. Hornung
Philipps-University Marburg

NEWSLETTER 14

1. LETTER FROM THE PRESIDENT

Dear Members of RC51,

The year of the Brisbane World Congress is over now, and we have turned our look ahead towards a whole set of new scientific projects and activities. During the past half-year you have received quite a number of e-mails from the outgoing board showing you that we were busily laying the foundations for this next period. This meant we had to organize the elections of the new board as well as engaging in organizational measures and the updating of our membership files.

As your old and new president I want to thank you very much for the trust and confidence you expressed by your votes, both personally and on behalf of the entire new board. The fact that the new 2002-2006 board of RC51 is composed both of re-elected members and a number of new faces will hopefully provide an excellent basis for an appropriate sociocybernetic mix of continuity, change, and innovation in the work of the new team.

The intensive administrative activity with which we bothered all of you over the past months was an indispensable building stone for our future, quite ambitious program of scientific activities. As our name says, we are according to the ISA Statutes a "Research Committee", or nowadays we should rather say perhaps a "Research Community", not just conference organizers. This implies intensive communications among and with ALL of our members. In spite of information society and cyberspace, which we evidently use extensively, this is not self-evident. An e-mail address is not enough, if it does not work, if it keeps changing, if it is not in regular use, if the person behind it does not find the necessary time to respond because of overload of information and work. That is why we insisted and will insist also in the future on getting also your fax, phone, and snailmail coordinates. Not just to satisfy our bureaucratic instincts! Although I have spent myself quite a number of evenings on detective work to get in touch with lost members, this cannot be the job of the board. It is clearly the responsibility and duty of each individual member to keep us up-to-date on his or her whereabouts and to remain communicationally reachable.

We urgently needed this update of membership data for the elections of the new board, but also for our future organizational development as an RC. The latter is in part influenced by the decisions, rules and regulations of the ISA, our parent organization. The number of sessions we can have at the World Congresses of Sociology, for instance, depends on the number of our ISA members, just like the possibilities to get different kinds of subsidies from the ISA.

Moreover, the ISA meanwhile obliges all RCs to raise RC membership fees. We have reported on this in our previous Newsletter and the new board will have to implement this decision. I can assure you, however, that the stage has been set already to do so in a member-friendly way. More on this issue you will find inside the Newsletter.

I expect that we soon can consider all of these organizational steps as accomplished, so that the new board and, of course, you as members of our research community can fully and vigorously concentrate on our future scientific activities and the further development of Sociocybernetics.

Bernd R. Hornung
President, ISA RC51

2. MESSAGE FROM THE SECRETARY

In the aftermath of last summer's World Congress of Sociology in Brisbane, Australia, RC51 embarked on a much-needed administrative consolidation that mainly concerned updating the membership roles. We are indebted to our President, Bernd Hornung and Past President, Felix Geyer who took on this monumental project and brought it to a successful conclusion. Indeed, an accurate membership list was found to be necessary in order to proceed with the election of a new board. Much of this issue of the Newsletter is concerned with these two activities. Finally, all members of RC51 are invited to submit abstracts for next summer's annual meeting in Corfu, profiled further down.

Richard E. Lee
Secretary, ISA RC51

3. NEW DEVELOPMENTS IN RC 51

3.1 RC51 and its Parent Organization, The International Sociological Association (ISA)

For the ISA the number of ISA members of a Research Committee (RC) is decisive with regard to several aspects.

The ISA determines the number of sessions an RC is allowed to have at the quadrennial World Congresses of Sociology - the next one to be held in 2006 in Durban, South Africa - on the basis of the number of the RC's ISA members. But also subsidies (e.g. for newsletters, travel, or congress fees) are determined on this basis.

The ISA, as our parent organization, provides the overhead facilities and resources from which all of our members profit. These include the organization of the World Congresses of Sociology, the availability of a number of journals at very cheap rates, the possibility to sign up for more than 50 Research Committees in just as many subfields of sociology almost free of charge, a regular ISA Bulletin, and a membership directory. Membership in the ISA is

therefore highly recommended. It comes at a rate of between $25 US (for the low income countries) and $255 US (for the high income countries) per FOUR years.

At the last World Congress of Sociology in Brisbane in July 2002 the ISA Executive Committee announced its decision that all Research Committees will be obliged to raise their own membership fees. Up to that point RC51 was one of the very few Research Committees that did not levy any membership fees whatsoever. We have managed to operate on a zero budget thanks to the cooperation of our board members and the institutions to which they are attached, but also thanks to the consequent and intensive use of email and the Internet. This situation had to change, but the outgoing board of RC51 decided to keep membership fees at a minimum, that is:

- US$ 25 for regular members in ISA country category A per 4 years
- US$ 15 for student members in ISA country category A per 4 years
- US$ 10 for members (regular and student) in ISA country categories B and C per 4 years.

Exceptions to these rates are possible upon request in cases of urgent needs.

ISA members can pay their RC fees through the ISA secretariat, and will soon receive an invitation to do so, while modalities of payment for non-ISA members still have to be specified and will be communicated before long.

These were among others important reasons for the membership updating campaign as described below.

3.2. Membership Updating Campaign

As you know, our board decided at the World Congress of Sociology last July in Brisbane to update our membership files. Members are formally defined as those who have sent us a duly filled out membership form and questionnaire. Moreover, it is strongly recommended, but not obligatory, for RC51 members to be also members of the ISA.

To update our membership files was urgent and indispensable for a number of reasons:
- To be able to communicate with our members we need up-to-date information about their whereabouts.
- To be able to plan our scientific activities for the next four year period, especially our annual International Conferences of Sociocybernetics and our participation in the next World Congress of Sociology, we need information about the interests and intentions of our members in these respects.
- To be able to comply with the rules and regulations of the ISA, our parent organization, and to enjoy the different advantages it offers to the RCs, we need reliable and up-to-date information about who and how many among our members are ISA members in good standing.
- To be able to carry out the elections for the new board of the RC in compliance with the standards requested by the ISA up-to-date membership information was essential.
- The membership data we had were often up to seven years old and therefore often not valid anymore. Snailmail addresses as well as office and home phone and fax numbers had changed in quite a number of cases meanwhile. Numerous members obtained a website (URL) since they had registered for RC51. We could not count on all such changes

being communicated to us.

- Since RC51 is operated nearly fully by means of email, this situation was especially worrisome with respect to the email addresses. Sending emails frequently resulted in non-delivery messages. In spite of our willingness to search for lost members - and in spite of our very limited resources to do so - the fact that we often also did not have a correct phone and fax number or URL meant that the person concerned could not be contacted at all and a new email address could not be found. In such cases the member concerned was definitely lost.

- Persons who indicated their interest in becoming RC51 members were invited to fill out a membership form and a questionnaire and to send them to our secretary. Meanwhile they were already added to our email distribution list and often stayed there even though they sometimes did not send the necessary documents and thus never really became members of RC51.

- A special sub-category among the latter cases consists of persons who had just signed up for the ISA or had renewed their ISA membership opting also for membership in RC51. Such persons, who were reported to us by the ISA secretariat in Madrid, rather often did not respond to our invitations to fill out the RC51 membership form and questionnaire and hence never really became RC51 members. Moreover, quite a few of them did not have an email address and did not manage to find a possibility for email communication, which meant that they had to be dropped after all.

The updating campaign started on September 27 with an email sent to all 350 persons on our initial distribution list, plus a follow-up with some additional information the next day. Attached to the first email were four files: a membership form, a questionnaire, a copy of our statutes, and a list of the candidates for the next board as proposed by the outgoing board. Our original deadline was October 10.

Having received only 50 membership forms and questionnaires by October 12, a first reminder including once more the attachments was sent to those whose computer systems had not responded with non-delivery messages. Those who had sent non-delivery messages received a reminder without any attachments as the latter might have been the cause of the delivery problems.

After a total of 91 membership forms and questionnaires had been received by October 22, a third reminder was sent to the still considerable non-response group only. In view of the limited response to this reminder, Felix Geyer then sent no less than 168 personally addressed appeals to the remaining non-respondents between November 15 and 17. This resulted in a total of 155 membership forms and questionnaires by November 25, when a fourth reminder was sent to the non-response group. At this point it was stated that all those would loose their RC51 membership who did not respond by December 1. Nevertheless, two more reminders were sent to this group on December 6 and 12, extending the deadline to December 11, resp. 16.

In the meantime reminders were also sent to the group of "undeliverables" on November 20, like the October 12 ones without attachments, as these might have been a reason for non-delivery. This promised to be successful in cases of temporary failures.

Based on the automated error messages we received, the following main reasons for

non-delivery could be identified:
- the person itself, i.e. the user, was unknown,
- the host was unknown, e.g. due to a change of the domain name,
- the mailbox was full,
- the message was too large,
- *attachments could not be received at all.*

The members on the non-delivery list were invited to download membership forms and questionnaires from our website if they would receive our message after a temporary failure of their system. As to the non-response group, last reminders were sent on December 6 and December 12. Some persons from the non-delivery group indeed turned out to be reachable after all and did fill out their membership forms and questionnaires, thus re-registering as RC51 members.

On December 19 the 350 persons on our initial email distribution list could be divided into the following four categories:
- *Members in good standing: 180 persons (re-)registered as members of RC51:* Out of the original email distribution list with 350 persons we ended up for the time being with 180 members in good standing (i.e. persons whose email address was apparently still correct or could be re-identified and who moreover fulfill our formal criteria: they sent us their duly filled out membership forms and questionnaires. Hopefully this number will still increase in the near future as we still expect more reactions from the non-response group, although our membership updating campaign is officially closed now.
- *Members lost in cyberspace: Emails to 51 persons turned out to be non-deliverable:* In these cases we actually received automated messages of non-delivery from the computer system concerned. As described above, the persons in this group nevertheless received several reminders and in some cases they were indeed only temporarily unreachable. Most persons in this group, however, simply neglected to tell us their new email addresses. Bernd Hornung and Felix Geyer made a time-consuming and labor-intensive effort to search for working email addresses of these persons on the internet, by fax, and by telephone. In some cases this was successful, in other cases also fax and phone numbers were outdated or not available at all. Taking into account the very limited resources of the board and its numerous tasks, such an effort can clearly not be repeated and it remains the full responsibility of each member to remain communicationally reachable.
- *Members communicationally unreachable or uninterested: 101 cases of non-response:* The non-response list, in spite of getting smaller and smaller throughout this campaign, still consists of 101 persons. Each of them received not less than seven emails. They either did not fill out the membership forms and questionnaires we asked for or, in the majority of cases, did not reply at all.

About the reasons for these non-responses we can only speculate. Many of them may actually be non-delivery cases not generating error messages. We only *assume* that the addressees in this group have received our emails but we cannot be sure. A few cases from this list are still pending. Some did respond after all, having received our materials late, e.g., due to absence, and promised to send their membership forms and questionnaires soon. Others asked us to send

the materials again as they had not received them in legible form or could not open them etc. Those who did not send the filled out forms yet still remain on the non-response list. The membership of all these non-respondents was cancelled meanwhile. Of course, they can sign up for new membership again, e.g. through our website, just like any other person interested in RC51.

- *Cancellations: 18 cases:* Finally, we received 18 cancellations. These are usually from members who are not active anymore in sociocybernetics, having moved on to other fields of interests. We wish them good luck in their further careers and herewith express the hope that their membership in RC51 had been an interesting stimulus for their future scientific activities.

- *Remaining cases:* Although our membership updating campaign has ended now, we still expect replies from a number of people:
  - Some of the nonrespondents promised to send us their membership forms and question- naires, but did not yet do so.
  - Persons interested in RC51 membership according to information from the ISA secretariat will once more be emailed, to the extent they have email, while those without email will be snailmailed or faxed, asking them to provide us with the email address e.g. of a colleague who is willing to transmit the messages.

3.3. RC51 Elections for the New Board (2002-2006)

A precondition for organizing and handling the elections properly was to have an up-to-date membership list, both with regard to the means of communication, in particular functioning email, and with regard to the statutory criteria for members in good standing, as only the latter have the right to vote.

Only after completing the membership update the elections could be organized properly, which was a much easier task than the previous one. The duly filled out ballot sheets had to be sent by email to Richard Lee and Felix Geyer. As the appointed secretary and the honorary president respectively, these two board members had no personal interest in the outcome of the elections and hence were the most neutral persons available to do this job.

A first step towards electing a new board had been taken already at the last business meeting during the World Congress of Sociology in Brisbane. There the president of RC51 had presented the list of candidates as proposed by the outgoing board according to our statutes. There had been no objections against this list at the business meeting, but also no propositions for additional or counter-candidates.

A further effort to receive proposals for counter-candidates was made in the context of the membership update campaign. The list of proposed candidates was added to the major mailings and the RC51 members were urged to propose additional candidates.

A first email concerning the voting process itself was sent on December 1 together with the ballot sheet and a list of the affiliations of the candidates. The deadline for returning the ballots was December 16. Reminders were sent on December 9, when 68 ballots had been received, on December 12, when 88 ballots had come in, and finally on December 16, when 109 ballots had arrived. By December 19, the last deadline, the total number of ballots received

had risen to 114.

All but four of the 114 ballots received approved all of the candidates. One of these four disapproved of one candidate, two voted only for those persons they personally knew, while one abstained totally from voting, not knowing any of the candidates personally. Two other members - not counted among these 114 - did not return the ballot sheet but emailed. One of them wrote that the sending of the ballot was too complicated, the other one felt not qualified to vote due to not knowing any of the candidates. Hence, all the candidates were elected to their posts with an overwhelming majority of approvals. The 2002-2006 board of RC51 is consequently composed now as follows:

President:	Bernd R. Hornung	hornung@med.uni-marburg.de
Vice-president:	Vessela Misheva	Vessela.Misheva@soc.uu.se
Secretary:	Richard. E. Lee	rlee@binghamton.edu
Treasurer:	Diane Laflamme	ad.laflamme@sympatico.ca
Journal editor:	Richard E. Lee	rlee@binghamton.edu
Newsletter editor:	Cor van Dijkum	c.vandijkum@fss.uu.nl
Webmaster:	Chaime Marcuello	chaime@posta.unizar.es
Scientific Relations:	Bernard Scott	B.C.E.Scott@rmcs.cranfield.ac.uk
Research promotion:	Karl-Heinz Simon	simon@usf.uni-kassel.de
Young Scientists Promotion:	Dario Menanteau	dmenante@maroon.tc.umn.edu
Chair, Abstracts Committee:	Arne Collen	acollen@saybrook.edu
Interdisciplinary Publications:	Søren Brier	sbr@kvl.dk
Organizer 2003 Conference:	Philippos Nikolopoulos	nikolop@groovy.gr , nikolop@phl.uoc.gr
Organizer 2004 Conference:	Mario Vieira de Carvalho	mvc@mail.telepac.pt
Organizer 2005 Conference:	Matjaz Mulej	Mulej@uni-mb.si

We herewith congratulate these candidates with their election or re-election. We will make an effort to soon have their photographs on the website, together with short descriptions of their functions and their backgrounds. One person, however, is still missing on this new 2002-2006 board: our program coordinator for the XVIth World Congress of Sociology in Durban 2006. As this is an extremely important position, this board member will be appointed at a later time by the new board

The 63,3 % voter turnout may nowadays be considered quite acceptable for Western democracies. Nevertheless, we feel it is rather low. In part, this lack of interest may be due to the fact that no alternative candidates were offered. In spite of several requests for additional proposals it is quite puzzling at first sight that our 180 members in good standing apparently could not suggest or did not feel the need to suggest even *one single counter-candidate* for *any* of the board functions.

Apparently this is in part a reflection of the fact that most members do not know one another and thus generally could not suggest other persons than the ones proposed to them by the outgoing board. Moreover, in case of a suggestion it was necessary to approach two other members to second the proposal, which led once more to the same problem. Also the possibility provided by our statutes to suggest oneself as a candidate was not used and does not seem to be attractive.

If this situation is to change in the future and if a real choice between different candidates for each of the board functions is to be possible, the willingness of our members to

get more actively involved, and to be available as candidate for a board function, clearly has to increase. The experience of these past months has shown that obviously the members of RC51 have to get to know each other a lot better than they do now. This, of course, is much more difficult to achieve in a large RC like ours than in a small one.

Up till now we have tried in several ways to further this goal by trying to offer opportunities for more intensive interaction. In some cases these have not been terribly successful, in others we are clearly on the right way. Already a few years ago we have tried to get our internet discussion group "Sociocybernet" off the ground, which is not to be confused with Mike Terpstra´s discussion list on sociocybernetics, which deals specifically with Luhmann´s systems theory and is not restricted to RC51 members. Quite a few of our board members have tried to initiate and stimulate discussions about pertinent issues of sociocybernetics. Unfortunately this discussion list has died a fast and silent death.

Another effort was to publish the website addresses (URLs) of our members on our own RC51 website at http://www.unizar.es/sociocybernetics/webs.html. While visiting these websites can give a fairly good idea of the interests of the person behind the website, we have the impression that this possibility is only sparingly used. Our main avenue of promoting scientific and personal contacts between our members - and even research cooperation - which has turned out to be very successful consists of our annual International Conferences of Sociocybernetics, which are attended usually by some 20-40 persons out of the 180 members presently on our membership list. Also a success, we feel, are our Newsletter, the Journal of Sociocybernetics, and other publications, although indeed we have received very little feedback on all of these.

All of these difficulties, which have become apparent, are evidently not specific for RC51. Instead, they have to be seen realistically in a wider context. We all are suffering chronically from lack of time, overload of work, information overload (or even "infoxication", as somebody put it recently), and we all have been also witnessing over the past years the increasing financial constraints and continuous reductions of the support, financial and otherwise, which our institutions are still ready and able to provide for our scientific activities, e.g., in the framework of RC51.

We have to take this into account when trying to find new possibilities to make RC51 still more attractive for our members with the limited means that are available. This certainly will be a very big challenge for the new board.

One such possibility to make RC51 perhaps a more close-knit group in the long run might be to present - on our RC51 website at the University of Zaragoza, Spain - short overviews of the publications of our members and of the projects they are working on at the moment. This evidently depends on reliable communication with our members and hence on up-to-date membership data. Under the current European data protection and copyright legislation it also, of course, requires your explicit and informed consent. The new board will discuss these perspectives in the near future and will then approach you on these issues.

This and similar initiatives will have to be worked out by our new board, and we hope you will join us in wishing the members of the new board every possible success in their efforts to promote Sociocybernetics within the international sociological community and beyond.

With best wishes for an enjoyable holiday season and a happy and productive New Year,

Felix Geyer   Bernd R. Hornung
- Honorary President -   - President -

4. COMMUNICATIONS ABOUT SOCIOCYBERNETICS

As became clear at the ISA conference in Brisbane the field of Sociocybernetics is a very promising field. However as RC51 we have to realize that not all discussions about Sociocybernetics are taking place at our conferences (including Interim Conferences), in our publications and inside our Journal & Newsletter. To realize the ambitions of Sociocybernetics we have to join efforts with other groups, not only in Sociology but also in other disciplines. In this context we are glad to note that a number of our members are active in/between and outside of RC51. We like to introduce in this newsletter two of them: Mike Terpstra and Søren Brier. They recently discussed the way interdisciplinary media of Sociocybernetics such as mailing lists and journals can stimulate each other. That invitation for interdisciplinary communication was started by our outgoing board member Mike Terpstra:

4.1 Sociocybernetics (Jottings on Luhmann)
http://groups.yahoo.com/group/sociocybernetics/

The mailing list, *Jottings on Luhmann,* began early in 1998 with Jesper Tække (Denmark), F.D. Bunsen (Germany) and several board members from the Working Group on Sociocybernetics, now known as RC51. The group was originally hosted by LISTBOT, then transferred to the present host, eGroups at Yahoo.

The original intent was to collaborate on papers in progress concerning Niklas Luhmann and his theoretical work. Members of RC51 were geographically isolated from other experts in the field of Luhmann's theory. Collaboration was envisioned for Sociocybernetics scholars to prepare to present papers at the1998 Montreal ISA World Congress of Sociology. By the way, it was at this congress that the "Working Group on Sociocybernetics" won approval as a full "Research Committee on Sociocybernetics". Although this list has never been an official RC51 mailing list, an RC51 Board member worked almost full time for the first year to develop the list as a forum for others to share work on Luhmann and solicit membership to RC51.

The focus expanded to include other sociocybernetics and social systems approaches. Although we primarily focus on the works of Niklas Luhmann, following the example of the German Luhmann List, discussion was welcomed on works from theorists such as von Bertalanffy. The reason for the emphasis on Luhmann is that his work has been largely ignored by American scholarship. Postings are encouraged on how to collaborate and work together to develop awareness of sociocybernetics.

Thank you, Søren Brier, for your work with *Cybernetics & Human Knowing.* Subscribing to this journal should be high on academic priority lists as a way to advance

research and education on sociocybernetics. Subscribers are needed to *Cybernetics & Human Knowing* to make it grow and become a more and more prestigious place to publish. This is what can be done to get our work recognized and pave the way for research money, courses and positions - so the knowledge can flourish.

Søren Brier welcomed that invitation and in turn wrote an introduction about the advantages of using email discussion lists and publications in the Journal *Cybernetics & Human Knowing.*

4.2 Interdisciplinary publications: *Journal of Sociocybernetics* and *Cybernetics & Human Knowing*: *A Journal of Second Order Cybernetics, Autopoiesis and Cybersemiotics*
www.imprint-academic.com/C&HK

As a recently elected member of the board entrusted with promoting interdisciplinary publications, I have been asked to state my vision in this respect.

Evaluating the various media we can use, I find that e-mail discussion lists are a good day-to-day discussion forum. However, I think that they should be coordinated, and I see no reason to separate the list on Luhmann from the sociocybernetics list as Luhmann naturally takes the position as one of the major researchers in the field. I agree with the purpose of the discussions on Luhmann and of spreading more knowledge about him to an American audience. I have tried to do the same relating to the *American Society for Cybernetics* and I think some bridge should be made between this society and RC51. But apart from interpreting and using Luhmann's theories I would also like to see comparisons with Habermas, Giddens and Bourdieu as we saw in Brisbane. I would also like to see discussion of Luhman's theories in relation to, for instance, Maturana's original theory of autopoiesis and to semiotics (C.S. Peirce and Thomas Sebeok's biosemiotics for instance).

Further I would like to see a flow of knowledge from the list into the conferences, from there to proceedings and then to the electronic *Journal of Sociocybernetics* and *Cybernetics & Human Knowing*: *A journal of Second Order Cybernetics, Autopoiesis and Cybersemiotics,* where Luhmann, von Foerster, Varela, Beer and Sebeok were editors until their recent death. This journal, which originally was produced in collaboration with the American Society for Cybernetics, is now connected to many different systems and cybernetics plus semiotics organizations and yet stays independent of them all. It is published by Imprint Academic, which also published the *Journal of Consciousness Studies*. It is created as a collective collaboration project between scholars and researchers working for free to create a respectable peer-reviewed journal of a non-disciplinary nature where we can develop new work in this huge inter- and transdisciplinary area and get credit for publishing there in our own institutions. The journal wants to create a research front, and to discuss new ways of understanding knowledge - for instance in the form of generalized media as Luhmann suggests - and the grand views of information science and global semiotics attending to the discrepancies between the functionalistic and the phenomenological-semantic approaches. We are very open for Luhmann materials, and actually we publish a paper on Luhmann and autology in Vol. 9, issue 3/4 just published, and a paper by Maturana discussing the development of his concepts and how they have been modified over many years of development of the theory. If you look

into the back issues you will find many papers on Luhmann and even a whole issue devoted to him.

The journal has now survived for 10 years, publishing four issues of 96 pages every year. The number of papers and their quality have been growing steadily over these years and so have the Journal's reputation and number of subscriptions. But there is still a long way to go to make it a major player in the global research community. For that you need to join the project by taking out an individual subscription and try to make your institution to take one too, which is often very difficult because of the interdisciplinary character of the journal. However, Imprint Academic offers you 10% reduction if you enclose proof of your membership of RC51. Then you should of course send in high quality papers to the journal or suggestions for theme issues. Let me introduce the journal further by quoting its own introduction to this interdisciplinary area of knowledge.

> Scientific endeavor in the post-modern age is becoming increasingly complex and transdisciplinary. Researchers and practitioners in the arts and the natural, medical and social sciences realize that the sharing of knowledge is desirable, necessary and possible. For people working in the IT-sector, second-order cybernetics can be translated to the understanding of his/her cognitive relation to the artificial system "user". In this, *Cybernetics & Human Knowing* is a valuable complementary to technologically oriented magazines as we provide a rich epistemological soil for the emergence of future metaphors. Our focus is on the need for change in the basic concepts of ourselves, our cultures, world views, values and views of what "genuine" knowledge is, and on the call for a new exchange between theoreticians and practitioners. A basic feature of this work is the attempt to integrate scientific thinking with ethical and aesthetic perspectives in both theory and practice, in an attempt to bridge what C.P. Snow called "The Two Cultures.

The journal as such is an autonomous knowledge and communication system, partly affiliated with the American Society for Cybernetics but with editors from many other cybernetic and systems organizations and journals and interested researchers from semiotics. Because of the interdisciplinary character, articles are generally written in such a way that readers from other domains can understand them. Authors from a wide range of disciplines, whose common ground is a passion for interdisciplinary, cybernetic, and semiotic description and explanation, will write with sensitivity for language that will make their ideas clear and their subject fascinating. *Scientific papers are of course peer reviewed*. Now and then, space will be given to more technical papers and a paper from a practitioner. The journal is thus a meeting place for those developing cybernetic and semiotics with those doing cybernetics and systemic work. An artist, whose contribution is an integral part of the journal, does the layout and illustrations of every issue. Within this frame, embodying the creative with the (multi)disciplinary, the journal has a high scientific standard and integrity - following Gregory Bateson's model of rigor and imagination.

The journal also supports columns where prominent researchers express their views on various aspects of the subject area. This strategy makes the journal interesting and readable for those interested in cybernetic and semiotic practice in government, industry, education,

therapeutic fields and the various fields of *information and communication sciences*. "

For vol. 10 (2003) the plans are that the first issue of the year will be a memorial and honorary issue for the creator of biosemiotics Thomas Sebeok with articles by famous semioticians such as John Deely, Marcel Danesi, Kalevi Kull, Susan Petrelli and August Ponzio. I am very pleased with and grateful for the papers we have received. It will be an excellent introduction to the whole field and a pointer to where the field can go in the coming years. The next issue "From Biologically Grounded Social Theory to Practical Action" will be edited by Wolf-Michel Roth from Canada and report on learning experiments and theories in the light of Pierre Bourdieu and others. Authors will be Michael Roth, Ken Tobin, Kate Scantlebury, Rowhea Elmsky. The last two issues will be a double issue in Honor of Heinz von Foerster, the creator of second order cybernetics that I am co-editing with Ranulph Glanville. It will have scholarly papers, review of his latest books, an interview and a section of personal remembrance of von Foerster from scientists and scholars all over the world that have worked with Heinz von Foerster and have known him. Amongst those that promised contributions are Humberto Maturana, Monika Broecker, Louis H. Kauffman, Alfred Mueller, Leon van Schaik, Gerard de Zeeuw, Dirk Baecker, Marcelo Pakmann and Frederick Steier.

All processing of articles, refereeing and proof reading is electronic. So feel free to send in files attached to e-mails to sbr@kvl.dk.

5. OBITUARIES FOR HEINZ VON FOERSTER

The death of one of the founding fathers of second order cybernetics is an occasion to remember the impressive contribution of Heinz von Foerster to our field of research. We do this here by reproducing two obituaries published by RC51 members Bernard Scott and Ranulph Glanville in The Independent Newspaper and The Times, and by publishing - in this issue of the *Journal of Sociocybernetics* - a book review by our RC51 President of a book where Heinz von Foerster (re)constructs his ideas in a Socratic Dialogue with his co-author.

5.1 Heinz von Foerster, Cybernetician
Bernard Scott (appeared, abridged, in The Independent Newspaper, July 25, 2002)

As a young Austrian physicist in the postwar years with little English, on the strength of an original thesis set out in a paper entitled "Memory: a quantum physical examination", Heinz von Foerster visited the United States. There, he was taken under the wing of the psychiatrist, logician and neurologist, Warren McCulloch, one of the extraordinary visionary polymaths who founded the discipline that came to be known as Cybernetics (from the Greek Kybernetes, steersman). Others included the mathematician Norbert Wiener, the anthropologists Gregory Bateson and Margaret Mead and the British psychiatrist and neurologist, W Ross Ashby). McCulloch chaired a series of interdisciplinary conferences for the Macy Foundation, where with his polymath colleagues the topic of "Circular causality and feedback mechanisms in biological and social systems" was debated. The young von Foerster was invited to take on the job of chief editor of the proceedings of the conferences, partly as a

way for him to improve his English. Around that time, Wiener published his classic work entitled "Cybernetics: Control and Communication in the Animal and Machine". From then on, the conferences were known as the Macy Conferences on Cybernetics.

On McCulloch's recommendation, in 1951 von Foerster took up the position of Professor of Signal Processing at the University of Illinois. In1958 he founded the Biological Computer Laboratory (BCL) and remained director thereof until his retirement in 1976. At the BCL, he hosted a collegiate of visiting scholars, a formidable list that includes Ross Ashby, Gotthard Gunther, Lars Loefgren, Gordon Pask, Humberto Maturana, Ernst von Glasersfeld, Stafford Beer and Francisco Varela. Arguably, without the leadership and inspiration of von Foerster, we would not have Pask's conversation theory, Maturana and Varela's theory of autopoietic systems, von Glasersfeld's radical constructivism, the theory of social systems developed by Niklas Luhmann, or the sociocybernetics of Felix Geyer and others.

After retirement, von Foerster remained active as a scholar, an emissary for cybernetics and as a mentor for a generation of younger cyberneticians. I include myself in this number, along with Ranulph Glanville, Dirk Baecker, Paul Pangaro, Sören Brier and Luis Rocha, to name but some.

Cybernetics thrives to this day as, depending on one's perspective, a specialism within the systems sciences, a complementary approach to that of the general theory of systems, first proposed by Ludwig von Bertallanfy in the 1950s , as in the phrase "cybernetics and systems" or as the discipline that gives looser approaches such as "systems thinking" or "artificial intelligence" clear and firm intellectual foundations. Heinz von Foerster understood cybernetics in this latter sense and, indeed, may be regarded as the chief architect in making clear the full structure of cybernetics as a holistic transdiscipline that provides models and concepts for dealing in a non-trivial manner with a range of formally analogous issues concerned with the form and behaviour of complex systems within a wide range of specialist disciplines (as examples, biology, psychology, sociology, economics, management studies) and also as a metadiscipline that comments on the processes whereby human observers come together as a community and establish the many and varied research programmes that make up the natural and social sciences and their many domains of application.

The development of cybernetics as a holistic transdiscipline was brought to fruition in the 1950s and 60's, with major contributions from the polymaths already mentioned but also with significant contributions from two Britons, the enfant terrible of cybernetics, Gordon Pask, whose early contributions included an adaptive entertainment system called "musicolour" and chemical computers that grew "ears", and his close friend, Stafford Beer, who, with his "viable system model", almost singlehandedly developed management as a cybernetic science. Von Foerster's contributions include a now classic paper published in 1960, "On self-organising systems and their environments", in which he argues that systems that are truly self-organising will always expand beyond the frames of reference adopted by observers to model their behavior; they are in principle unpredictable unless by training, conditioning or other constraints are made to become so, in which case they become "trivial machines" rather than the interesting "non-trivial machines" they were formerly. (Note: following Ross Ashby, in cybernetics "machine" and "system" are synonyms for any observed entity "that persists").

The concerns of cybernetics with metadisciplinary issues were imminent in cybernetic debates from the earliest discussions. It was understood that it is the observer who distinguishes a system as such. It was understood that the epistemology of the observer, how she, as a system comes to observe and know her world and the systems therein, was a complex matter. The great Swiss psychologist, Jean Piaget, devoted his life to a study of these processes. For him, the study of child development was "genetic epistemology", a study of how we come to know. In his later writings, Piaget firmly aligned himself with the aims of cybernetics, saying, for example, that his account of child development begins with the concept of "cybernetic circuits in equilibrium".

During the 1960s and 70s and drawing on, amongst others, the work of Piaget, Erwin Schroedinger ("the observer may enter the domain of his own descriptions"), Ludwig Wittgenstein ("I am my world"), Alfred Korzybsky ("the map is not the territory), Jerzy Konorsky ("information cannot be separated from its utilisation") and the latest developments in brain research and computation theory, von Foerster published a series of elegant papers where he addressed the foundational issues of how it is that a system becomes an observing system. He summarised many of his insights as pithy aphorisms. His research programme was that of "explaining the observer to himself". The observer as a Piagetian constituter of "objects" is his own "ultimate object". The environment of an observing system "contains no information; it is as it is." Von Foerster's achievement was momentous: he shows that as we draw on our science to explain how we ourselves work we find ourselves in a hermeneutic circle of explanation. As he puts it "we need a brain explain a brain." If a brain is a constructer of maps and models, it behoves us to acknowledge that all our theories and explanations are constructions. Our experience of being part of a "reality" is also construction. It behoves us to take responsibility for the worlds we construct. He advises us to "act towards the future you desire". He notes that as good cyberneticians in an unpredictable world we should "act so as to maximise the alternatives". He notes that in a world that is intrinsically social, where observers are always part of a community in their very constitution as self-aware systems, "A is better off when B is better off". This is the cybernetician's version of the great commandment "Love thy neighbour".

In 1974, Von Foerster set out his main area of concern. He said he was doing "cybernetics of cybernetics". He clarified this terse phrase by making a distinction which has since been adopted as a core tenet of cybernetics, the distinction between a first order and a second order cybernetics, where "First order cybernetics is the study of observed systems" and "Second order cybernetics is the study of observing systems". As a gifted cybernetician, von Foerster was a gifted communicator. The reader can sample for himself one of von Foerster's most accessible summaries of his concerns in the paper "Ethics and Second Order Cybernetics", available at http://www.imprint-academic.com/C&HK .

Heinz von Foerster (originally Förster) was born in Vienna on November 13, 1911, the eldest son of Emil von Förster and his wife Lilith, née Lang, and educated in philosophy and logic by the Vienna Circle, and in physics at Vienna's Technical University. He completed his doctorate at the University of Breslau (now Wroclaw) in 1944. In 1951, he took up a professorship in signal engineering at the University of Illinois, Urbana, founding the Biological Computer Laboratory in 1958. Heinz von Foerster gained may honours including

Guggenheim Fellowships (1956-7 and 1963-4), Presidencies of the Wenner-Gren Foundation (anthropology) (1963-5), the Society for General Systems Research (1976-7) and the American Society for Cybernetics and Fellowship of the American Association for the Advancement of Science (1980). In 1996 the University of Vienna made him an honorary professor and in 2001 he was awarded the Ehrenring of the City as well as the first Viktor Frankl Prize. He published around 200 scientific papers and several books, and gave over 1000 lectures around the world, where his experience as a magician informed his performance (he was a member of the Magic Circle). He leaves his widow Mai, two surviving sons Andreas and Thomas, his sister and three grandchildren. Heinz von Foerster, cybernetician, died on October 2, 2002 aged 90 at his home in Pescadero, California.

5.2 Heinz von Foerster: Early exponent of cybernetics and 'circular causality'
Ranulph Glanville (Published in The Times, London October 25, 2002)

As a youth in Vienna, Heinz von Foerster's first claim to fame was as a magician. But more important, and to some people just as magical as his tricks, was his transformation of cybernetics (in the decade around 1970) by insisting that the observer must be taken into account in the description of any system, because he may affect the processes being observed. From this he went on to develop systems to modify the formulation of the systems of classical cybernetics, in an extension of the field that became known as "the cybernetics of cybernetics" or "second-order cybernetics".

Heinz von Foerster (originally Förster) was born in Vienna, the Eldest son of Emil von Förster and his wife Lilith, and educated in philosophy and logic by the Vienna Circle, and in physics at Vienna's Technical University. He completed his doctorate at the University of Breslau in 1944.

His family was distinguished and held a prominent position in the intellectual life of Vienna: friends and relatives included the philosopher Ludwig Wittgenstein, the playwright Hugo von Hoffmansthal, the painter Erwin Lang, and the Wiesenthal family.

The family supported Josef Matthias Hauer, the inventor of an alternative to Schoenberg's 12-tone technique. His grandfather was architect of the Vienna Ring. He had a brother, Ulrich, and a sister, Erika, and was especially close to his cousin Martin Lang, with whom he studied magic and roamed Austria's mountains in winter and in summer. In 1939 he married the actress Mai Stürmer, with whom he had three sons.

During the war von Foerster lived and worked in Berlin, where he moved to disguise the Jewish element in his ancestry, and did research in short-wave and plasma physics. At the end of the war he found a way back to Austria, where he worked in the telephone industry while also reporting on art and science for the Austro-American radio station Rot-Weiß-Rot, his communication skills and showmanship flourishing. Meanwhile, he was working on his book Memory: A Quantum Physical Examination. To promote this, he moved to the United States in 1949, where (with barely a word of English) he was taken up by the mathematician, neuroscientist and philosopher Warren McCulloch, with whom he communicated in the language of mathematics.

The trip was a turning-point. McCulloch was then chairing the Macy Conferences on

"Circular Causal and Feedback Mechanisms in Biological and Social Systems" in New York, which were attended by the anthropologists Margaret Mead and Gregory Bateson, the computation theorist John von Neumann and the mathematician Norbert Wiener.

To improve his English, von Foerster was made secretary and editor. His first act was to add "Cybernetics" to the conference title. Together with Wiener's book Cybernetics (1948), these conferences gave form and substance to the emerging discipline. The study of "circular causality"can now be said to be the real heart of cybernetics. McCulloch arranged for von Foerster to become director of the University of Illinois tube laboratory. Von Foerster imported his family and lived in Champaign until his retirement in 1976, when he moved into a house that he built himself, with his architect son, above the Pacific outside Pescadero, California.

In 1958 von Foerster founded the Biological Computer Laboratory, attracting considerable funding. As well as a cohort of students, he hosted most of the distinguished scholars in cybernetics for residencies, and the laboratory became the world's most advanced centre for the development of cybernetic thinking. The first parallel computers were built there, and crucial research was carried out on the fast electronic switching that is critical to today's computers.

Although von Foerster is known in some circles for his excursion into demographics (when he started lively debate in the journal Science), he was most important for sponsoring radical work in such subjects as the organisation of the living and the foundations of mathematics and logic.

He tended to hide his own contribution behind the work of others, but his understanding of the reflexive nature of systems led to profound changes in the understanding of knowledge and of our connection with the world in which we find ourselves. For many he reintroduced the amazement of wonder.

Having held Guggenheim fellowships in 1956-57 and 1963-64, von Foerster won many honours. He was president of the Wenner-Gren Foundation, 1963-65, and of the Society for General Systems Research, 1976-77. He was elected to a fellowship of the American Association for the Advancement of Science in 1980, and in 1996 the University of Vienna made him an honorary professor. Last year he won the first Viktor Frankl Prize. He published some 200 scientific papers and several books, and gave more than a thousand lectures around the world. He is survived by his wife, Mai, and two sons. Heinz von Foerster, cybernetician, was born on November 13, 1911. He died on October 2, 2002, aged 90.

[As you may know, one of the other founding fathers of the logic of 'recursive causality' (or better: recursivity), Stafford Beer, also recently died. In our next Newsletter we will publish an obituary for Stafford Beer by one of our members.]

6. UPCOMING CONFERENCES

In the following we present as usual some short information about upcoming conferences that may be of interest to you. Please note that if you want to participate in some of them, you have to very soon send your abstract. We first of all present some detailed information about our

own conference this summer in Corfu, which can be considered as a preparation for our conference next year in Lisbon, which will be organized in cooperation with the well-known Gulbenkian Foundation.

1. Fourth International Conference on Sociocybernetics, Corfu, Greece 2003, June 29 – July 5, 2003. As was decided in the RC51 business meeting in Brisbane the fourth, fifth and sixth International Conferences on Sociocybernetics are planned for Corfu, Greece, June 29 – July 5, 2003; Lisbon, Portugal, summer 2004; Maribor, Slovenia, summer 2005, to be followed by the World Congress of Sociology in 2006 in Durban, South Africa)

Details of the Portugal and Slovenia Conferences will be published later on in our Newsletters. Our conference in Greece is planned just before the ISSS annual meeting in Heraklion, Crete, Greece, July 6-11 (see sub 5), so that participants can travel on July 6, and may participate in both conferences. Information about the practical details for this conference such as hotels and prices, conference site, etc is unfortunately not yet definite. We are sorry for this, and will email you the details as soon as they become available. Please regularly consult our website (http://www.unizar.es/sociocybernetics/) to obtain the most up to date information.

Conference theme: Within the framework of this conference two major objectives are to be dealt with. The first part will concentrate on identifying and specifying the principles of sociocybernetics. This will include the perspectives of First Order Cybernetics in the tradition of General System Theory, non-Luhmannian Second Order Cybernetics as developed e.g. by Heinz von Foerster and in the Cognitive Sciences, and the perspective of Luhmann´s autopoietic theory of social systems. The papers presented in this part are expected to serve as a basis for ample discussion leading to the specification of the outlines of an introductory text on the question "What is sociocybernetics?" and are expected to be to be revised as parts of such a text after the conference.

The second part of the conference will turn towards the applications of such principles to the analysis of social history and development, in particular in the multicultural arena of the Mediterranean and Greece, hopefully with a particular look at Corfu. Of special interest are applied analyses of the interplay of social and cultural aspects in long-term development and the lessons which can be learned for community development in a local context like Corfu under the conditions of globalization, information society, and tourism as an expression of unlimited global mobility.

Abstracts for papers should be 500- to 1000-word *detailed abstracts* for the review process and the definitive assignment to a particular session. At a later point 250 word *regular abstracts* are needed for publication on our website. All abstracts should be sent to the recently elected chair of the Abstracts Committee, Arne Collen (acollen@saybrook.edu), and to our vice-president Vessela Misheva (Vessela.Misheva@soc.uu.se), and our president Bernd R. Hornung. (hornung@med.uni-marburg.de). The abstracts committee will decide about acceptance and will possibly suggest improvements and modifications, in particular in order to ensure compliance with the conference theme. Abstracts have to deal with one of the major subjects mentioned above and should fit well with the overall objectives of this conference.

2. The Opening of Systems Theory, Copenhagen, Denmark, May 23-25, 2003. The Center for Corporate Communication (CCC) at the Copenhagen Business School invites researchers to a conference about the systems theory of Niklas Luhmann, its relationship to other theories and its usefulness with regard to empirical work. The conference has the twofold purpose of testing systems theory in relation to other theories and in relation to empirical research. The thematic centre of this "opening of systems theory" is the organisation theory of Niklas Luhmann; however, other elements of systems theory are also welcome. The theoretical centre is the question of second-order observation. Abstracts of approximately 400 words should be sent to Center for Corporate Communication, ccc@cbs.dk before February 1 2003. Further details will be available on the CCC website: http://asp.cbs.dk/ccc/luhmann.asp

3. Environment and Society, Wageningen, The Netherlands, June 13-15, 2003. A workshop on Governing Environmental Flows: Reinventing the Environmental State in Global Modernity. Abstracts shall be submitted by 15 February 2003 to:
Peter Oosterveer, peter.oosterveer@wur.nl
Fax: 31 317 483990.
For further information see http://www.sls.wageningen-ur.nl/es/

4. Inaugural conference: North American Association for Computational Social and Organizational Science, Pittsburgh, PA, June 22-25, 2003. The New Year is a great time to event new events and happenings. For those of us in the computational social and organizational science community, the hard work of many has led to the formation of the new society - NAACSOS - The North American Association for Computational Social and Organizational Science. In addition, 2003 is the inaugural conference for the newly formed NAACSOS. This blends many of the old/existing computational social science groups and events together into a regional event that spans all the computational social and organizational sciences . This year the conference will be run with the CASOS conference as a sub-panel. In future years the conference will rotate to other sites and other conferences may appear as sub-panels. More details on the newly formed society and the conference are available at the relevant sites listed below.
Call for abstracts: http://www.casos.ece.cmu.edu/conference2003/index.html

5. Agoras of the Global Village, Crete, Greece, International Society for the System Sciences, 6 - 11 July. This conference of the ISSS (International Society for the Systems Sciences) has the above theme, which has been chosen to focus attention on: (a) the challenge facing humanity as it transforms from "evolutionary consciousness" to "conscious evolution," and (b) the role systems thinking must play in constructing 21st Century Agoras in the context of globalization.
        Globalization is being described by many as an emerging new system of world order that has accelerated following the end of the Cold War order in 1989. Systems thinking must make clear what is being eliminated and what constructed by globalization. We must rise to the challenge of democratizing the processes of conscious evolution to ensure that globalization

empowers all peoples and not just elites.

During the conference itself, no formal paper presentations will be made, even though acceptance of abstracts and full papers and/or posters is required. In order to be congruent with the general theme of the conference and the specific focus of our inquiry, the sessions will be conducted as learning conversations. Participants will engage first in a generative conversation in which they will have the opportunity to share the core ideas of their work with each other. After the group has attained a basic collective cognitive map of the research and constructs represented in the room, we will to move into a strategic conversation to identify areas of synergy, create new knowledge and insights, and propose further collaborations.
See: http://www.ISSS-conference.org

6. International Association for Media and Communication Research Conference, Taipei, Taiwan, July 14-16, 2003. Information Society and Globalization: What's Next? Digital technology and information systems have greatly changed the facets of media and communication practices of our time. Interactions between the global and the local have led to new dynamics between communication development and social changes. The emergence of the digital revolution and the information society has led to a need to re-examine the existing media and communication theories. How will this new form of global/local interactions and dynamics develop? What is the next trajectory of its development? What dimensions of study could contribute to the understanding of the future development of the information society? These questions are intertwined with the concept of 'Glocalization' and can be explored from many aspects in media and communication research.
See: http://iamcr2003.org.tw

7. The 21st International Conference of The System Dynamics Society, New York, USA, July 20 - 24, 2003. The conference theme of Economic Dynamics will bring together diverse perspectives on the application of system dynamics to economic problems in order to foster animated debate. In addition, submission is encouraged for work on all topics germane to system dynamics including: applications of system dynamics and systems thinking in business, engineering, health care and public policy, policy studies emphasizing the role of feedback, advances in the modeling process and group model building , system dynamics contributions to theory building in the social and natural sciences, complex nonlinear dynamic systems.
Works may be submitted from January 2, 2003 to March 23, 2003. *For Call of works see*:
http://www.systemdynamics.org/conf2003/callforpapers2002.html

8. Fourth Inter-Symposium on Sustainable Development, Baden Baden, Germany, July 28-August 2, 2003. See: http://www.iias.edu/pdf_03/SD_Symp_call.pdf

9. Stockholm Music Acoustics Conference, Stockholm, Sweden, August 6 - 9, 2003. The tradition of a large international conference on music acoustics in Stockholm every 10th year is now well established. It all started way back in the 80´s with SMAC 83, followed by SMAC 93 a decade later. A SMAC 13 can be foreseen, as well. Like earlier SMACs, SMAC 03 will welcome contributions from the entire field of music acoustics, including acoustics of musical instruments, physics-

based modelling, the singing voice, music performance, music perception, and control of new musical instruments.
See: http://www.speech.kth.se/smac03/

10. Agent Based Modeling Meets Gaming Simulation, Chiba, Japan, ISAGA 2003 Conference & Workshop, August 25-29. *ISAGA2003 Conference:* ISAGA2003 (The 34th Annual Conference of the International Simulation and Gaming Association) will be held August 25-29, 2003 at Kazusa Academia Park, Chiba, Japan.
Call for papers at: http://www.isaga2003.org
ABMMGS 2003 Workshop
In the ISAGA2003 conference we organize a special workshop called ABMMGS (Agent Based Modeling Meets Gaming Simulation) on August 26 or/and 28, 2003.
Workshop Conveners:
Hiroshi Deguchi, Tokyo Institute of Technology (deguchi@dis.titech.ac.jp)
Kiyoshi Arai , Chiba Institute of Technology (k-arai@pf.it-chiba.ac.jp)
Klabbers, J.H.G. , University of Bergen (jklabbers@kmpc.nl)
        We call for presentations at this workshop which are related to both ABM and Gaming Simulation or its methodology. For example: Hybrid Model of ABM and Gaming Simulation, Model docking between ABM and Gaming Simulation, Methodology for ABM and Gaming Simulation, Design of ABM depending on Gaming Simulation, Design of Gaming Simulation depending on ABM, Real World Grounding of ABM, Software Agents for Gaming Simulation, Application of ABM to Social Sciences with Decision Makers.
        Abstract (about 350 words) should be sent to secretary@isaga2003 by e-mail until 1st March with following information: 1) Workshop Name: ABMMGS2003 (in ISAGA2003); your name, email address and affiliation; title of your abstract, and abstract itself (350 words):

11. The Environment & Society Network, Murcia, Spain, September 23-26, 2003. Sixth Conference of the European Sociological Association The Environment & Society Network (ESN) of the European Sociological Association (ESA) invites papers on a Sustainability and Social Change".
For more information on proposed themes see Environment & Society Network: http://www.esa-esn.org

Call for Information about Interesting Conferences:
As editors of the newsletter we do our best to publish information about interesting upcoming conferences. However we will certainly miss a number of interesting events.
As a reader of the newsletter you can help us with this deficiency of information. Please send your Call for Papers, announcements of interesting conferences, etc. to Cor van Dijkum, c.vandijkum@fss.uu.nl .

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